

Gigabyte
GA-H61N-USB3

Thermaltake
Level 10 GT LCS

Aerocool
Syclone II



cpu

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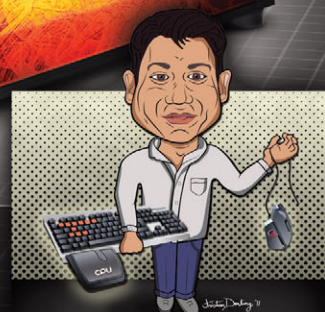
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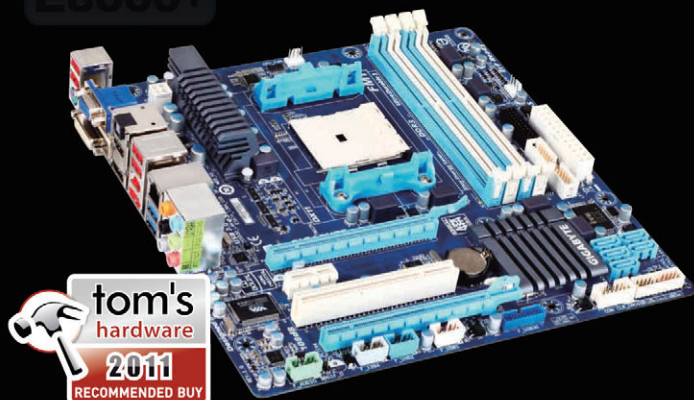
GIGABYTE A75 Motherboard

"The GA-A75M-UD2H shoots for overkill"



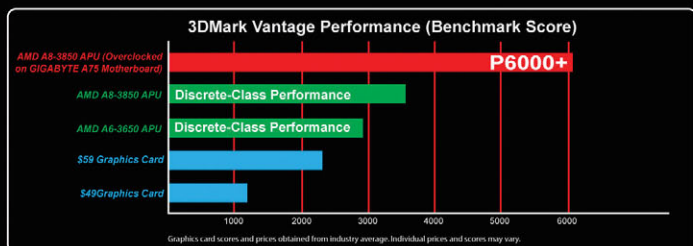
DX11

AMD RADEON™
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GRAPHICS**



GIGABYTE Z68 Motherboard

"The Z68XP-UD3 firmly targets performance fanatics"



*Overclocking configuration: GIGABYTE A75M-UD2H - AMD APU A8-3850 at 3.77GHz (Aircooling) - DDR3 - 2320MHz / 750 - 143MHz / GPU 670MHz

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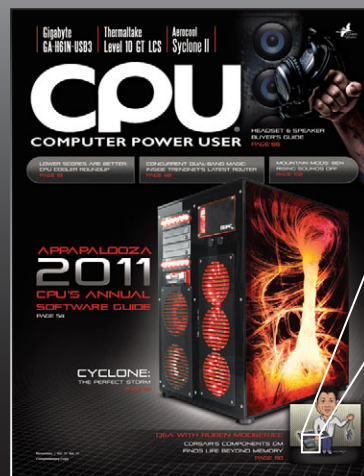
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Gotcha.
Here it is.

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Corrections

On page 33 of the October issue, the fourth sentence in the first paragraph of the second column should read: "In CPU-centric applications, AMD's chips are roughly 75% as capable as similarly clocked Core i7s from Intel."

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Powermat & Duracell Unite Their Powers



A wireless charging frontier. That's what Procter & Gamble, owner of the Duracell brand, and Powermat, "pioneer and leader in wireless charging," are seeking to create via a joint venture they recently announced that will bring the "most innovative and compelling wireless power products to consumers around the world" beginning as early as next year. General Motors recently tabbed technology from Powermat, which introduced its first wireless charging products in 2009, for integration in GM automobiles beginning next year. Powermat's venture with P&G, meanwhile, will see P&G making an equity investment in Powermat, which is said to also be planning wireless charging products aimed for use in public spaces, office furniture, and major appliances. ■

Corsair Seeks Vengeance From FPSes

There's been no shortage of companies throwing their keyboards, mice, and headsets into the gaming accessory ring as of late. Corsair is a recent example, introducing a new Vengeance line of gaming gear for FPS enthusiasts in mid-September. The announcement included three USB- and 3.5mm-based headsets (1100, \$39.99; 1300, \$79.99; 1500, \$99.99) and industrial-designed wired keyboards (K60, \$109.99; K90, \$129.99) and mice (M60, \$69.99; M90, \$79.99). Accompanying the accessories announcement were details of an online Vengeance Cup tournament Corsair is throwing that will feature Call of Duty play. Corsair expects 256 teams to vie for \$10,000 in prize money with action to start in October and the grand finals set for Nov. 21. Anyone can benefit from tournament play, however, as Corsair plans to hold random drawings for various gear. ■



WATCHING THE CHIPS FALL

Here is the pricing information for various AMD and Intel CPUs.

CPU	Released	Original Price	Company Pricing*	Online Retail Price*
AMD Phenom II X6 1100T Black Edition	12/7/2010	\$265**	\$205**	\$189.99
AMD Phenom II X6 1090T Black Edition	4/27/2010	\$295**	\$185**	\$169.99
AMD Phenom II X6 1075T	9/21/2010	\$245**	\$181**	\$159.99
AMD Phenom II X4 980 Black Edition	5/3/2011	\$185	\$185**	\$169.99
AMD Phenom II X4 975 Black Edition	1/4/2011	\$195**	\$175**	\$159.99
AMD Athlon II X4 Quad-Core 645	9/21/2010	\$122**	\$102**	\$104.99
AMD Athlon II X3 Triple-Core 460	5/3/2011	\$87**	\$87**	\$89.99
AMD A8-3850 Quad-Core	7/3/2011	\$135**	\$135**	\$139.99
AMD A6-3650 Quad-Core	7/3/2011	\$115**	\$115**	\$119.99
AMD A4-3400 Dual-Core	8/30/2011	\$69**	\$69**	\$79.99
Intel Core i7-990X Extreme Edition	2/14/2011	\$999**	\$999**	\$999.99
Intel Core i7-2600K	1/9/2011	\$317**	\$317**	\$314.99
Intel Core i7-2600	1/9/2011	\$294**	\$294**	\$299.99
Intel Core i5-2500K	1/9/2011	\$216**	\$216**	\$219.99
Intel Core i5-2500	1/9/2011	\$205**	\$205**	\$209.99
Intel Core i5-2400	1/9/2011	\$184**	\$184**	\$189.99
Intel Core i5-2320	9/4/2011	\$177**	\$177**	\$189.99
Intel Core i5-2310	5/22/2011	\$177**	\$177**	\$189.99
Intel Core i3-2130	9/4/2011	\$138**	\$138**	\$149.99
Intel Core i3-2120	2/20/2011	\$138**	\$138**	\$139.99

* As of September 2011

** Manufacturer's estimated price per 1,000

MSI Reverses Course Of Action To Combat Dust

Dust. It has been the longtime nemesis of computer users for decades. According to MSI, the result of dust that accumulates on the fan blades of a graphics card is the reduction in cooling performance that can lead to a GPU's working temperature rising by 15 degrees Celsius. Enter the company's Dust Removal Technology, now available on MSI's big daddy N580GTX Lightning Xtreme Edition card. (Expect the technology to show up in other cards down the line.) So, what does the technology do exactly? Interestingly, nothing more really than spin the fan blades in reverse for 30 seconds upon booting a system up to kick dust off the blades (and hopefully out of the system). Head to MSI's Web site for videos demonstrating the technology in action. ■

LSI Demos 12Gbps SAS

According to Bill Wuertz, LSI senior VP and general manager of RAID Storage Division, "Solid-state drive performance coupled with the approaching industry transition to PCI Express 3.0-based server platforms is driving the need for 12Gbps SAS connectivity." To that end, the company recently demoed its next-gen 12Gbps SAS RAID-on-Chip technology at IDF. The demo involved what amounted to a single 8-port IC that can achieve more than 1.2 million IOPS powering small block sequential read/writes via a PCI-E 2.0 direct-attached storage configuration attached to eight 6Gbps Seagate 2.5-inch SAS HDDs. The 12Gbps SAS ROC is based on LSI's fourth-generation SAS architecture and offers what LSI states is a 57% enhancement in IOPS performance and 45% increase in I/O throughput vs. LSI's previous 6Gbps SAS ROC. A press release states that volume shipments of 12Gbps SAS-enabled servers are slated for early 2013 with external storage systems to follow by possibly mid-2013. ■

Hardware Mole

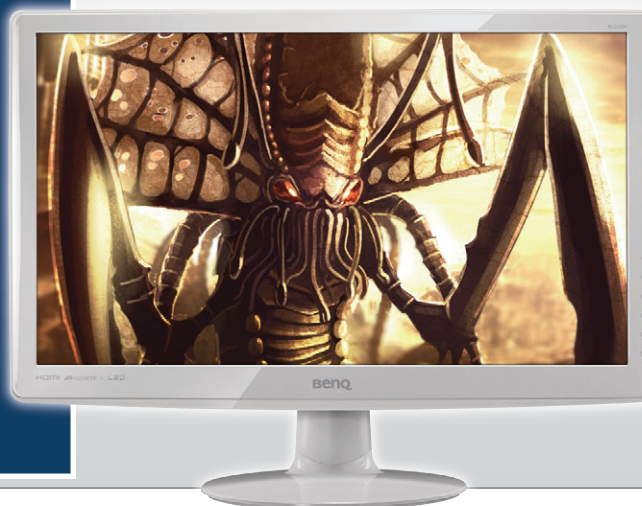
Satechi Locks Down External Drives

For all the convenience and practicality that portable drives afford, they're always at risk of being stolen or lost. Satechi's LockDown USB 3.0 SATA HDD enclosure (\$99) safeguards data on 2.5-inch portable drives via a four- to eight-digit password, "even when the internal drive is taken out of its enclosure." The drive features a touch keypad and OLED screen and works independently of a system's OS to provide full AES 256-bit hardware encryption and swift USB 3.0 transfer speeds. There's no software to install to use the LockDown, and the enclosure is compatible with Windows, Mac, and Linux systems, as well as NAS, media player, and other USB host-supporting devices. ■



BenQ Cooks Up RTS Eye-Candy

BenQ has released what it calls the world's first RTS gaming monitor via the RL2240H, a 21.5-inch LED backlit monitor offering a Display Mode that lets gamers switch among 17-inch (4:3), 19-inch (4:3 and 16:10), and 21.5-inch (16:9) screen sizes. A Smart Scaling feature, meanwhile, allows for manual scaling to customized sizes. The RL2240H follows the release earlier this year of the company's XL2410T, a 26-inch LED panel model that BenQ collaborated with Zowie Gear and the StarTale StarCraft2 pro gaming team to create. BenQ worked with the same outfits on the RL2240H. Among the results of the collaboration is the implementation of Black eQualizer, "an exclusively designed color engine technology that reveals critical combat details with improved visibility in darkened areas." Elsewhere, a preset RTS mode offers "tailored monitor calibrations for RTS gaming." Pricing details are still to come. ■





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Maximus IV Extreme-Z Motherboard

Based on Intel® Z68 Express chipset, the Maximus IV Extreme-Z motherboard features Intel® Smart Response Technology for SSD caching and Lucid Virtu™ with Intel® Quick Sync for simultaneous usage of both integrated and discrete GPUs. In addition, this motherboard is loaded with all the great Republic of Gamers overclocking features such as ROG Connect and BIOS Flashback for the easiest and fail-safe overclocking experience. ROG Connect allows you to connect your desktop to a notebook or tablet via USB or Bluetooth for real-time reporting and tweaking. BIOS Flashback allows you to save two versions of the BIOS simultaneously for twice the overclockability- or use one as a save point. The Maximus IV Extreme-Z gives you the best overclocking experience to push your CPU to its limit.

MARS II Graphics Card

The MARS II graphics card is the world's, undisputed, fastest graphics card and features two overclocked NVIDIA GeForce® GTX 580 GPUs on a single PCB. Armored in an aluminum shroud and back plate, the MARS II features two 120 mm fans and ASUS' exclusive DirectCU thermal solution for 6X better airflow. ASUS exclusive DirectCU technology places copper heat pipes in direct contact with the GPU for better heat dissipation. In addition, MARS II features a 21-phase Super Alloy Power with special blend alloy for chokes and capacitors for improved lifespan and a Super Hybrid Engine for power management resulting in better performance and cooler operation. Experience the best graphics in ANY game with the MARS II graphics card.

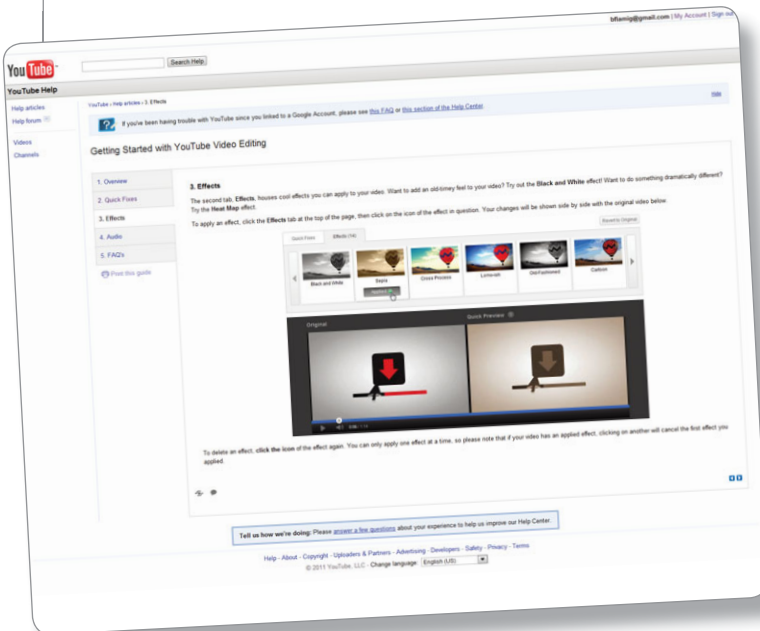
Vulcan ANC Headset

Lightweight, durable and scratch -resistant, the Vulcan ANC collapsible design makes these the best headset for any gamers who travel often to LAN and gaming events. For easy storage, these headsets also come with a detachable 3.5 mm cable with in-line volume control and detachable noise-filtering microphone. To communicate with your teammates without missing a beat due to ambient noise, the noise-filtering microphone and active noise cancellation makes the Vulcan ANC headset an essential part of any gamers' gear. Vulcan ANC headset feature up to 30 decibels noise isolation along with 40 mm drivers for crystal clear and directional audio details for a completely immersive gaming experience.

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YouTube Puts Edits In Users' Hands

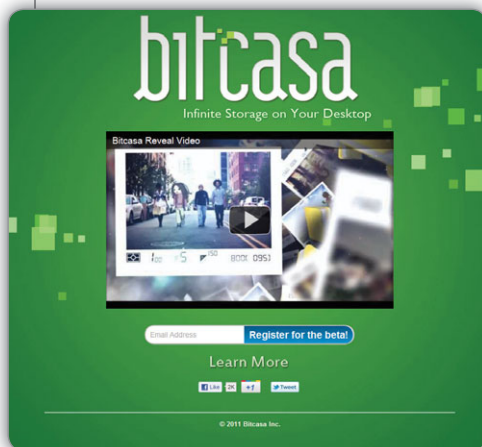
As the overlords of YouTube recently stated on the video-sharing site's blog, previously when you uploaded a video to the service it was "hosted and shared, but couldn't really be changed" with a fresh trimming, soundtrack, or edits unless you did so in a separate program and uploaded the video again. That's changed with a new suite of editing tools that lets you edit videos directly on YouTube and "maintain the same video IDs," meaning all previous video comments, viewer counts, and links remain. Beyond various effects provided with the help of Picnik (Cross Process, Lomo-ish, Thermal, Black and White, etc.), users can rotate videos, enhance contrast and color, stabilize footage, and apply a sweeping I'm Feeling Lucky one-click fix. YouTube notes, however, that videos with more than 1,000 views and those with third-party content can only be "saved as new videos once edited." ■



Intel & McAfee Go Deep To Get Safe

Intel's purchase of McAfee last year for roughly \$7.7 billion appears to finally be bearing fruit in the form of DeepSAFE, jointly developed on-chip security technology. McAfee states the technology will enable building "hardware-assisted security products that take advantage of a deeper security footprint" and that sit beyond the OS "close to the silicon, allowing McAfee products to gain an additional vantage point in the computing stack to better protect systems." McAfee detailed DeepSAFE at the recent Intel Developer Forum reportedly stating DeepSAFE would detect and block rootkits in real time. McAfee stated in a release that according to McAfee Labs, 1,200-plus new rootkits are detected daily, roughly 50 per hour. "A system running the DeepSAFE technology was able to detect and stop a zero-day Agony rootkit from infecting a system in real time," McAfee stated. Plans are to include DeepSAFE in various products yet this year. ■





"Infinite Storage On Your Desktop"

\$10 per month. That's how much startup cloud computing storage service Bitcasa is charging customers for unlimited cloud storage via a unique approach that essentially writes files to the cloud as they are saved to a system's hard drive. Thus, Bitcasa becomes "your new hard drive," and your existing hard drive essentially serves as "cache" from which to access files when you're offline. Bitcasa states it uses client-side encryption to secure data before sending it cloud-bound, adding that "we store it, but we can never see it." Former MasterCard, VeriSign, and Mozy employees founded the company, which was registering beta users and offering free accounts for life to a lucky chosen few through late October. Reportedly, the service uses patented de-duplication and compression techniques to arrive at its attractive \$10-per-month rate. Other features include an ability to "cloud-ify any folder" with a right-click, share folders and files with right-click ease, and access Bitcasa folders via a HTML5 Web portal. ■

Software Shorts



PayPal Wants To Help You Bypass Lines

PayPal recently demonstrated new payment-making technologies to merchants that Scott Thompson, PayPal president, stated in a blog post will give customers "a much better shopping and buying experience" that doesn't involve "just shoving a credit card on a phone." A PayPal video, for example, shows shoppers making in-store payments by scanning items' barcodes and using a PayPal account via a smartphone to complete purchases vs. standing in line and swiping a credit card at a register. Another example shows a user entering a PIN on a register in lieu of swiping a credit card. Thompson stated PayPal's "re-imaging" of money entails making payments from any device (not only smartphones) and offering more flexibility after customers have checked out. This includes "geo-targeted mobile advertising," "real-time inventory availability," "mobile and point-of-sale payments," and virtual wallet abilities. Days after PayPal's demonstration, Google announced the first version of Google Wallet, "an app that makes your phone your wallet," making it available to all Sprint Nexus S 4G phones via an OTA update. ■

It's You That's Really To Blame

Through the years, there have been countless studies focused on the supposed negative effects that violent videogames have on players, including impressionable younger ones. Research the American Psychological Association recently released, however, points to the possibility that individual personalities can play largely into negative effects players demonstrate. Psychologist Patrick Markey of Villanova University, who helped pen the study based on data gathered in 2009 from 118 participants, stated, "If you're worried about a videogame turning your son or daughter into a killer, don't worry about that." Rather, if your child is moody, impulsive, or unfriendly, he says, "It's probably not the best idea to have that child play violent videogames." A separate study from Brock University, meanwhile, found competition in games as possibly influencing aggression, "not the violent content." Wrote Paul Adachi, "We found—irrespective of violent content—the two highly competitive games produced more aggressive behavior than the two less competitive games." ■

Bad News Bears At Play In Idaho

Think you have Internet connection problems where you live? Try residing in Idaho where, according to a recent *New York Times* article, users suffered from the slowest Internet speeds nationwide previously this year, putting up with 318KBps rates that translate into 9.42-second downloads of standard music files vs. 3.36 seconds in Rhode Island, the fastest state for average speeds (894KBps). In addition to being sparsely populated and the home of the Rocky Mountains' Bitterroot Range (which leaves Idaho with a "series of peaks, ridges, forests, high plateaus, and river valleys" that make it costly to lay cable or build towers), connection problems have been attributed to snow, fog, and even bears rubbing against towers. In other words, "the kind of problems you probably don't have in an urban area," stated resident Barry Ramsay. ■

First Amendment Appreciation Rises Thanks To Social Networks

More than 75% of students use social media multiple times daily to obtain news and information according to the John S. and James L. Knight Foundation's "The Future Of The First Amendment" study. More interesting, 91% of roughly 12,000 students participating in the study using social networking daily to get news and information agree that people should have the right to "express unpopular opinions" vs. 77% who also agree but never use social networks to obtain news. Ken Paulson, First Amendment Center president, says the study indicates "social media bring the importance of free speech home to young Americans" and "the vibrancy of worldwide communications today, fueled by social media and engaged users, is in effect exporting First Amendment values to a new and global generation." ■

Social Spammers Fake It To Make It

Impermium, a startup headed by Mark Risher, former Yahoo! "spam czar," that offers a subscription-based approach to protect companies against "social spam," recently debuted the Impermium Index, revealing some interesting information. Based on more than 104 million social media transactions gathered from June through August from 90 million-plus users in 72 countries, the index states fraudulent social networking accounts range from 5 to 40% of users, with "scammers registering accounts by the millions as they perpetuate fake 'friend requests,' deceptive tweets, and the like." Impermium states that in August it helped protect a "prominent social network" from a coordinated attack involving more than 30,000 fraudulent accounts that "lit up" in one hour and tried to submit more than 475,000 malicious wall posts. Humorously, Impermium found that Uggs was the most exploited brand in social media channels, "proving that it's still 2009 in spam land." ■

Site Seeing

Netflix Fesses Up, Debuts Qwikster

"I messed up. I owe you an explanation." Thus began Netflix CEO Reed Hastings' email explanation delivered Sept. 19 to subscribers concerning the DVD-by-mail service Netflix has now split off and is calling Qwikster (www.qwikster.com). Among other things, Hastings stated that customer feedback following the company's announcement months prior that it would no longer bundle a movie streaming option with DVD delivery subscriptions contained a lack of "respect and humility." Netflix will operate Qwikster separately from its streaming service. Though Reed promised no further pricing changes ("we're done with that!"), Qwikster and Netflix won't be integrated. Thus, subscribers to both services will see two entries on their credit card statements. Also notable is that Qwikster will offer Wii, PS3, and Xbox 360 game rentals, something Hastings said DVD subscribers have requested for years. ■



MOG Drops The Needle On FreePlay

Similar to other music-delivery services, the highly acclaimed MOG (www.mog.com) offers a free Web-only service that grants access to its music library of millions of songs to discover new artists and tracks. Also similarly, MOG provides subscription plans for unlimited, no-ad song streaming (\$4.99 per month) and mobile device support (\$9.99 per month). Uniquely, however, MOG recently debuted FreePlay, a "free, ad-supported" version of the on-demand service that gives listeners a "virtual gas tank" full of music they can refill by earning free music. Essentially, users will help promote MOG via activities that "demonstrate engagement and drive virality." Examples include creating and sharing playlists, exploring the site, and referring friends. "Tastemakers and influencers can easily get a lifetime of free on-demand music," stated CEO David Hyman. ■

Job Of The Month

How much better does a job posting get than this? "Have you seen every episode of Dragonball Z, Naruto or Cowboy Bebop? Or do you reminisce about the classics such as Voltron, Speed Racer or Gundam?" Anime fans with digital video chops, your dream job is here, courtesy of online video portal, Hulu. Yes, the home of TV episodes galore is also one of the biggest repositories of licensed Japanese animated content. They need a Digital Video Publisher with anime specialization. But not so fast, Transformer-lover. This gig is for a hardcore Japanese pop cult maven who is fluent in spoken and written Japanese. You will need to edit the video metadata across the video's native tongue and English. Get over that hurdle and you also need experience managing digital video-editing and Web-posting technologies. But if you have all of those skills, wouldn't you rather traffic new episodes of Bleach than, well, have some boring U.N. translator position?



bit.ly/olH8AL

Cracking The Code: Who Is Using QR?

Goofy-looking QR codes are popping up everywhere, in magazines, on grocery packages, and at bus stops. But who is most likely to whip out their smartphone and snap a picture of those QR (Quick Response) codes to trigger mobile content? According to a recent comScore survey, 14.4 million people in the United States snapped a QR code in June. Of those, 60.5% were male and almost 61% were age 34 or younger.

Where QR Code Scanners Found Their Codes

Printed magazine or newspaper	49.4%
Product packaging	35.3%
Web site on PC	27.4%
Poster or flyer or kiosk	23.5%
Business card or brochure	13.4%
Storefront	12.8%
TV	11.7%

RAW

NUMBERS: VIDEO EDITION

18%

Percent of surveyed Web video viewers who watched a full TV episode online in a given day (Yahoo!)

34%

Percent of TV viewers who post to Facebook while watching TV (Yahoo!)

353.7

Average minutes spent in July per viewer visiting Google video sites (primarily YouTube) (comScore)

65.8%

Apple iTunes' Share of digital movie sales and rentals for the first half of 2011 (iSuppli)

How Many Brands Do You Follow on Twitter?

(Source: Lab42 survey of 500 Twitter users, ages 18 and up.)



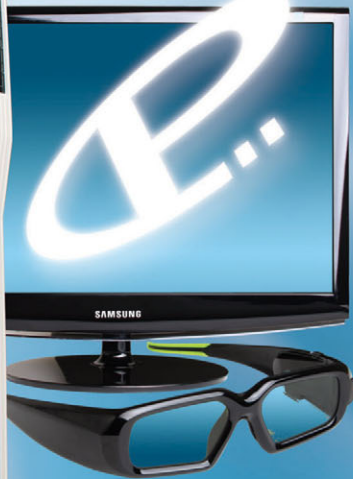
None	10%
1 - 5	31%
6-10	20%
11-20	18%
21-30	10%
31-50	3%
51+	8%



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Gamer Infinity 8800 Pro SE

Intel® Core™ i7 Processor

Genuine Microsoft™ Windows® 7 Home
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Corsair® 12GB DDR3 1333 Triple Channel Memory

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i7

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Intel® Core™ i7 Processor

i7

(8MB L3 Cache, 1066Mhz)
Extreme i7-990X 3.33Ghz \$ 1855
i7-980 3.33Ghz \$ 1399
i7-960 3.20Ghz \$ 1099



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Intel® Core™ i7 Processor

Genuine Microsoft™ Windows® 7 Home Premium 64-bit Edition Service Pack 1

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Nvidia® GeForce® GT 520 1GB Video Card

Raidmax Blade Gaming Case 600 Watt

Asetek Liquid Cooling System



Gamer Xtreme 2000

Intel® Core™ i7 Processor

Genuine Microsoft™ Windows® 7 Home Premium 64-bit Edition Service Pack 1

Gigabyte® GA-Z68-A D3-B3 Mainboard w/ USB 3.0 and SATA III

Corsair® 8GB DDR3 1333 Dual Channel Memory

1TB 7200RPM SATA-II 3.0Gb/s 16MB Cache Ultra Fast HD

ATI Radeon™ HD 6850 1GB Video Card

Apevia X-Dreamer 3 Gaming Case with 600 Watt CrossFire Power

Asetek Liquid Cooling System



Gamer Xtreme 3000

Intel® Core™ i7 Processor

Genuine Microsoft™ Windows® 7 Home Premium 64-bit Edition Service Pack 1

Gigabyte® GA-Z68-A D3-B3 Mainboard w/ USB 3.0 and SATA III

Corsair® 8GB DDR3 1333 Dual Channel Memory

2TB SATA-III 6.0 7200 RPM HD 64MB Cache

Nvidia® GeForce® GTX 560 1GB Direct X 11 Video

CoolerMaster HAF 912 Gaming Tower Case with 700 Watt Power

Asetek Liquid Cooling System

Intel® Core™ i7 Processor

i7	(8MB L3 Cache, 1066MHz)	
	i7-2600K 3.40GHz	\$ 819
	i7-2600 3.40GHz	\$ 795

i5	i5-2500K 3.30GHz	\$ 709
	i5-2500 3.30GHz	\$ 699
	i5-2400 3.10GHz	\$ 685
	i5-2300 2.80GHz	\$ 675

i3	i3-2105 3.10GHz	\$ 589
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Intel® Core™ i7 Processor

i7	(8MB L3 Cache, 1066MHz)	
	i7-2600K 3.4Hz	\$ 839
	i7-2600 3.4GHz	\$ 815

i5	i5-2500K 3.30GHz	\$ 835
	i5-2500 3.30GHz	\$ 819
	i5-2400 3.10GHz	\$ 805
	i5-2300 2.80GHz	\$ 795

i3	i3-2105 3.10GHz	\$ 715
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From
\$715

Intel® Core™ i7 Processor

i7	(8MB L3 Cache, 1066MHz)	
	i7-2600K 3.4Hz	\$ 1069
	i7-2600 3.4GHz	\$ 1039

i5	i5-2500K 3.30GHz	\$ 949
	i5-2500 3.30GHz	\$ 939
	i5-2400 3.10GHz	\$ 925
	i5-2300 2.80GHz	\$ 915

i3	i3-2100 3.10GHz	\$ 829
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	2820XM	\$1158
	2630QM	\$799
i5	2410M	\$762
i3	2310M	\$707

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Intel® Core™ i7 Processor

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	2820XM	\$1553
	2630QM	\$1195
i5	2410M	\$1157
i3	2310M	\$1102

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BY MARTY SEMS

Leon Speakers Trithon REYN

Steampunk isn't about "they don't make 'em like they used to"; it's about "what if they made 'em like *this*?" Standing 9 feet tall and lovingly encircled in 13 feet of python skin (!), the Trithon REYN (leonspeakers.com) is a TV like no other. Leon Speakers set a 40-inch LED LCD into a cabinet of black walnut, then hoisted it atop an antique surveyor's tripod. Of course the Trithon is fitted with the company's high-end Horizon HzUT-X-A, a multichannel loudspeaker as thin as the display itself. To join up with the original Trithon REYN, you would need to part company with \$35,000, but Leon has also prepped more streamlined sets that could ship commercially for half the price. ■



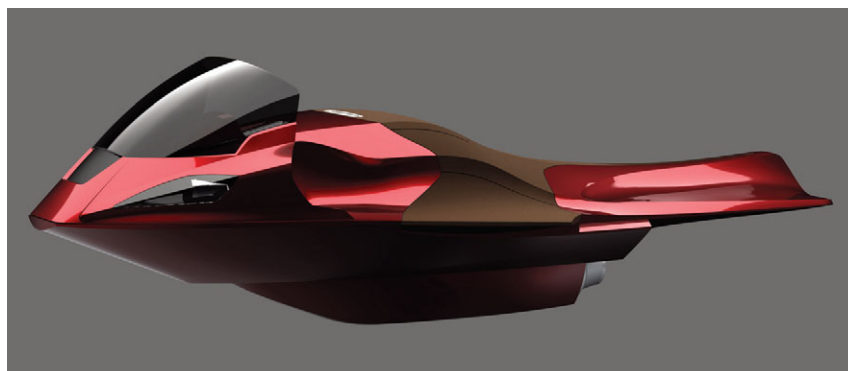
Sony F65 CineAlta

You certainly get a lot of motion picture camera for \$65,000 these days. The story of the F65 CineAlta 4K (pro.sony.com) begins with Sony's new 8K CMOS image sensor, which arranges its 20 million photosites in a nontraditional way for more accurate green, blue, and red imaging. It's also designed to maintain contrast in fine details. Evidence of the F65's ultra-high resolution and extra-wide color gamut is the footage it socks away as 16-bit Linear RAW output, which can then be translated into distributable formats such as 4K (4,096 x 2,160), 1080p, and so on. The feature list presents much more to ogle for cinematographers, many of whom will be willing to trade an eye for a camera like this when it debuts in January. ■



EXOCONCEPT EXO

Don't tell Jimmy Buffett or his Save the Manatee Club, but we're suddenly in the mood for a new jet ski. Set to ship out next summer is this gorgeous vessel from French developer EXOCONCEPT (www.exo-concept.com). It surges forth with an electric hydrojet of up to 9.4hp. Belowdecks are lithium iron phosphate batteries, which are not only highly desirable in EV circles but also lightweight. In fact, the entire carbon fiber version of the EXO (\$27,000 and up) can weigh less than 86 pounds. If you don't mind an extra 20 pounds or so, you can save a bundle by going with an ABS edition of the EXO, which starts at just \$10,000. You can also forget about the obnoxious racket of a fossil-fueled personal watercraft: Because it's all electric, the EXO is silent and nonpolluting. We'll bet that a tree-hugging troubadour—heck, even the man from Margaritaville himself—could get behind that. ■



Keep It Cool

Chill Out With Some New CPU Coolers

Intel and AMD have made several changes to their CPU sockets over the past two years. As such, if you're planning on upgrading a system you built a few years ago, you might not be able to cannibalize the heatsink from your old system. On the plus side, CPU cooler manufacturers have been continually upgrading their coolers to handle heat from today's fast multicore processors, so a new CPU cooler will likely do a better job than an older model. In addition to the third-party heatsink-fan combos traditionally relied upon to hit high overlocks, an influx of closed-loop liquid-coolers has made adding watercooling to your rig easier than ever.

Here, we checked out a number of the newest CPU coolers on the market. We'll note that nearly all of the CPU coolers were compatible with Intel's LGA775/1155/1156/1366 sockets, and AMD AM3+/3/2+/2 sockets. Corsair's H100 and H80 are also compatible with Intel's LGA2011, while Cooler Master's Hyper 212 EVO, Gelid's GX-7, and Scythe's Mugen 3 are compatible with AMD's FM1 socket.

How We Tested

Our test system included an Intel Core i7-2600K (which we didn't manually overclock), an Nvidia GeForce GTX 580, and 16GB of G.Skill RipjawsX memory, all of which we installed into a Corsair Graphite Series 600T. We ran the Intel Core i7-2600K at the stock clock speed for 30 minutes in idle to provide you with a base temperature. To stress-test the CPU cooler, we ran three tests: POV-Ray 3.7 Beta, four instances of Prime 95's Small FFTs test for 10 minutes, and two instances of Orthos for 10 minutes. We gathered all temperature readings using RealTemp.

Corsair Hydro Series H100

The H100 is the newest addition to Corsair's Hydro Series of liquid CPU coolers. It comes with a 240mm radiator and two 120mm fans to provide you with high-end cooling performance, as well as a Hydro Series pump/cold plate assembly that features three modes (Quiet, Balanced, or Performance) you can select by pressing a button on the CPU cooler. In this way, you can match the cooling to your desired performance and noise level. In our testing, we ran the H100 in Performance Mode.

It was easy to install into our Graphite Series 600T, as the top panel of the case has perforated holes and mounts for the two 120mm fans. The cold plate has thermal paste spread onto it, so you don't need to add any to your processor. Corsair indicates that the prefilled, closed-loop system never needs refilling, so the H100 shouldn't require any maintenance.

The H100 topped or tied all challengers in all three of our benchmarks. At idle, the maximum temperature was 26

degrees Celsius, and it was below 50 C in all of our tests. The H100's performance under load was between 38 and 40 C cooler than the Intel Core i7-2600K retail cooler under load.

Antec KÜHLER H₂O 920

The KÜHLER H₂O 920 is another closed-loop liquid-cooling system. Compared to its KÜHLER H₂O 620 predecessor, the 920 offers a radiator that's almost twice as thick, and it comes with two fans (rather than the 620's single fan), so there's a lot more overclocking potential waiting for you. We also like that Antec builds in a PWM (Pulse Width Modulation) control and provides software to let you adjust and monitor the cooler's performance.

We installed the KÜHLER H₂O 920's fans and radiator into the rear exhaust of our case. Antec indicates that you should set up the fans to blow air out of the system. The pump/cold plate assembly is held in place with a metal retention ring that has tension clips you tighten over the assembly. Similar



Hydro Series H100

\$119.99 | Corsair | www.corsair.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366/2011, AMD AM2/3; Materials: Copper (cold plate), aluminum (radiator); Dimensions (radiator): 122 x 275 x 27mm (HxWxD); Fans: 2 120mm; Airflow: 46 to 92cfm; Acoustics: 22 to 39dBA

to the Corsair liquid-coolers, the thermal paste has been preapplied to the cold plate. Installing the included software let us see the current temperature, sound level, and RPM of both fans.

We were able to control the fan speed and alter the settings, such as when the automatic fan controls change based on the CPU temperature. For our testing, we selected the Extreme mode, which pushed the fans to 2,400rpm. Temperatures rivaled the Corsair H100, as it either tied the H100 or was within 1 C of the

lowest temperature in our tests. Load temperatures below 50 C mean you'll have plenty of headroom for overclocking your processor. On an artistic note, we also like that the pump features built-in LEDs that you can change the color between red, green, and blue.

Corsair Hydro Series H80

The Hydro Series H80 is a closed-loop liquid-cooler that offers a 120mm radiator and includes two 120mm fans. Similar to the H100, the heatsink

features a digital fan controller button that lets you choose one of three cooling modes (again, Quiet, Balanced, or Performance). The heatsink also offers two fan connectors that allow the unit to control fan speeds through PWM settings.

Corsair recommends that you set up the fans to suck outside air into the case, which is the opposite recommendation of Antec's closed-loop liquid-cooler. The main difference is that you'd be pushing hot air from the radiator into your case, but with our Corsair Graphite 600T, which offers a 200mm fan at the top of the case to pull hot air out of the system, we didn't notice any difference in our case temperature during testing. The ability to use two fans also means that Corsair has improved upon the design of some previous Hydro Series coolers that only could use one fan.

The H80 performed admirably in our benchmarks, posting temperatures of 28 C at idle, 50 C in Prime 95, 46 C in POV-Ray Beta, and 32 C in Orthos. Those numbers are lower than all the air coolers in the roundup, so there's a definite advantage of going with today's closed-loop coolers. And the H80's numbers were a little more than half the temperature of Intel's Core i7-2600K retail cooler.



KÜHLER H20 920

\$119.95 | Antec | www.antec.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3/3+; Materials: Copper (cold plate), aluminum (radiator); Dimensions: 151 x 120 x 49mm (HxWxD); Fans: 2 120mm; Airflow: 110cfm; Acoustics: 43dBA



Hydro Series H80

\$109.99 | Corsair | www.corsair.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366/2011, AMD AM2/3; Materials: Copper (cold plate), aluminum (radiator); Dimensions (radiator): 152 x 120 x 38mm (HxWxD); Fans: 2 120mm; Airflow: 46 to 92cfm; Acoustics: 22 to 39dBA

Logisys Gamer Storm

The Gamer Storm is a tall air cooler that comes with one 120mm PWM fan, and there are clips and a free slot for a second 120mm fan if you wish to add more cooling. The heatsink features a copper base and six heatpipes. The heatpipes and aluminum fins are nickel-plated, giving the Gamer Storm a sturdier feel than your typical air cooler. The nickel plating also provides a shiny finish that will reflect lights inside your case.

The back plate is made of rubber (with built-in metal screw holes), which Logisys indicates helps to reduce vibration and noise. Logisys includes three fan power adapters with the

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Gamer Storm. There's a 4-pin Molex adapter that will provide a fixed input voltage of 12V, so the CPU fan will always run at the highest speed. A three-pin motherboard fan connector will run the fan at 7V, which will provide you with a low level of noise. The third adapter is a Y-shaped adapter to connect two PWM fans to your motherboard, yielding fan speed control to your motherboard.

We installed the Y-shaped adapter to run our benchmark tests and noted that the fan speed adjusted easily in our tests. Idle temperatures for the Gamer Storm was 41 C, while our stress tests showed temps of 70 C (Prime 95), 68 C (POV-Ray Beta), and 53 C (Orthos). Those numbers were among the top of the air coolers in this roundup.

Gelid GX-7

The GX-7 offers seven heatpipes arranged in a way to maximize heat dissipation from the processor. With a typical arrangement, the various heatpipes on a cooler will be set up in a single row.

Looking at the GX-7 from the top down, it has five heatpipes on the bottom, and Gelid soldered two more to the three middle heatpipes. Another inventive aspect is the V-shaped openings in the bottom of the aluminum fins, which improves airflow through the middle of the fins. The innovations delivered results, too, as the GX-7 delivered the lowest temperatures among the air coolers in our roundup.

In terms of installation, we found the compression bolts were smaller than some of the other CPU coolers in the roundup, which made them tougher to install and easier to lose. Only one fan is provided with the CPU cooler, but you can use the included set of clips to add a second fan. We also like that Gelid provides a fan with a blue LED, which can enhance the interior lighting of your case.

In Prime 95, the GX-7 delivered a maximum temperature of 55 C, which was within 5 to 7 degrees of the closed-loop liquid-coolers in the roundup. It registered 53 C in POV-Ray Beta and 46

C in Orthos. Idle temps were 38 C. All in all, the Gelid GX-7 is a solid option for overclockers looking for a high-end air cooler.

ARCTIC COOLING Freezer 13 PRO CO

The Freezer 13 PRO CO comes with a six-year warranty and is designed for continuous operation. The 300W model sent to us features a 120mm PWM fan, as well as a 50mm radial fan at the base of the heatsink to provide cross ventilation, which ARCTIC COOLING suggests will also help to cool the components, such as the voltage regulators, surrounding the CPU. The air cooler features four 8mm copper heatpipes that protrude from the top of the aluminum fins.

For installation, ARCTIC COOLING provides plastic pins that insert into a plastic clip that locks to the motherboard, so there's no need to remove the motherboard to install the cooler. The Freezer 13 PRO CO screws into the plastic clip, and the screw placements are far enough away that it's easy to install



Gamer Storm | \$69.99
Logisys | www.elogisys.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3; Materials: Copper (heatpipes), aluminum (fins); Dimensions: 158 x 98 x 134mm (HxWxD); Fan: 1 120mm; Airflow: 66.3cfm; Acoustics: 17.6 to 27.6dBA



GX-7 | \$65
Gelid | www.gelidsolutions.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3/3+/FM1; Materials: Aluminum (fins); Dimensions: 159 x 65 x 130mm (HxWxD); Fans: 1 120mm; Airflow: 75.6cfm; Acoustics: 10 to 26.8dBA



Freezer 13 PRO CO | \$58.32
ARCTIC COOLING | www.arctic.ac

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD 754/939/940/1207/AM2/2+/3; Materials: Copper (heatpipes), aluminum (fins); Dimensions: 159 x 96 x 134mm (HxWxD); Fans: 1 120mm; Airflow: 49.7cfm; Acoustics: 0.4 Sone (at 1,350rpm)

the screws. Even better, you don't need to add thermal paste, because ARCTIC COOLING preapplies its MX-4 thermal compound. This was probably the easiest installation of the roundup.

In our benchmarks, the Freezer 13 PRO CO delivered one of the lower idle temperatures at 39 C, and it also posted the second-lowest temperature among air coolers in Orthos (49 C). In Prime 95, we saw maximum temperatures of 72 C, and it reached 69 C in POV-Ray Beta. With one of the longer warranties and its cross-flow cooling, the Freezer 13 PRO CO provides some added reliability.

Cooler Master GeminII S524

The GeminII S524 offers an arched CPU cooler design that lets system builders use high-end memory modules with tall heatsinks. Cooler Master includes a 120mm fan, but you can upgrade to 140mm if you wish to increase the GeminII S524's cooling capacity. The electroplated copper base moves heat to the five 6mm heatpipes, which angle upward and outward to spread the

heat evenly over the 140mm aluminum fins. Cooler Master also indicates that the 120mm fan pushes air through the heatpipes and over other components on the motherboard.

The 120mm fan included with the GeminII S524 includes PWM to automatically adjust fan speed (from 800 to 1,800rpm) based on the CPU heat. Similar to other Cooler Master air coolers,

installation consists of adding a back plate to the motherboard, where you'll push through the CPU mounting bracket and secure the CPU cooler using hex bolts. Cooler Master provides a handy hex bolt head that you can place over the bolts to tighten them with a screwdriver.

The GeminII S524 produced temperatures of 70 C (Prime 95), 67 C (POV-Ray Beta), and 50 C (Orthos). The overclocking headroom provided by the GeminII S524, combined with the clearance for tall memory heatsinks, gives you the freedom to select processor and memory components with high frequency potential.



GeminII S524 | \$49.99
Cooler Master | www.coolermaster.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3/3+/FM1; Materials: Copper (base, heatpipes), aluminum (fins); Dimensions: 105 x 144 x 144mm (HxWxD); Fans: 1 120mm; Airflow: 34.2 to 77.7cfm; Acoustics: 15.1 to 31.6dBA



Mugen 3 | \$45
Scythe | www.scythe.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3/3+/FM1; Materials: Copper (heatpipes), aluminum (fins); Dimensions: 158 x 130 x 132mm (HxWxD); Fans: 1 120mm; Airflow: 40.17cfm; Acoustics: 10.7dBA

Benchmark Results	Idle	Prime 95	POV-Ray Beta	Orthos
Intel Core i7-2600K stock cooler	43	87	84	60
Corsair H100	26	49	44	32
Antec KÜHLER 920	27	49	44	33
Corsair H80	28	50	46	32
Logisys Gamer Storm	41	70	68	53
Gelid GX-7	38	55	53	46
ARCTIC COOLING Freezer 13 PRO CO	39	72	69	49
Cooler Master GeminII S524	38	70	67	50
Scythe Mugen 3	38	69	67	51
Cooler Master Hyper 212 Evo	42	75	72	52
Rosewill RCX-ZAIO-92	42	80	78	52

*All temps in degrees Celsius

Scythe Mugen 3

Although the Mugen 3 is the successor of the popular Mugen 2, you'll be surprised to learn that Scythe made this new cooler smaller than its predecessor. The redesign of the Mugen 3 includes Scythe's M.A.P.S. (Multiple Airflow Pass-through Structure) technology that improves the airflow throughout the aluminum fins, as well as the addition of a sixth copper heatpipe. Scythe includes a 120mm Slip Stream PWM Silent series fan. Motherboards with fan control options can adjust the fan speed between 300 to 1,600rpm.

Installing the Mugen 3 isn't overly complicated, but it also wasn't the

easiest CPU cooler to install out of those in the roundup. Make sure you hold on to the back plate when installing the compression nuts. Scythe does provide a second set of fan clips, in case you want to install a second 120mm fan. The instructions indicate that the fans should be set up to blow air out to the rear exhaust.

The cooler posted under load temperatures of 69 C in Prime 95, 67 C in POV-Ray Beta, and 51 C in Orthos. Those numbers were very competitive among the roundup's other air coolers, and at \$45, the Mugen 3 delivers good value for its price. Power users concerned about idle temperatures will also note that the Mugen 3's idle temperature of 38 C tied with the lowest among the air coolers in the roundup.

Cooler Master Hyper 212 EVO

This air cooler features four direct-contact heatpipes to maximize thermal dissipation with your processor. Cooler Master includes one 120mm PWM fan, and you can install a second 120mm fan if you want to enhance the Hyper 212 EVO's performance. The included fan can automatically adjust from 600 to 2,000rpm, which produces 24.9 and 82.9cfm of airflow.

The Hyper 212 EVO comes with a modular mounting clip that you can adjust to fit the various Intel and AMD sockets. For Intel, spread the clip wide. AMD sockets can be matched by narrowing space between the clips. We like the flexibility of this setup, because you may be able to match it up with future Intel or AMD sockets. We also like that Cooler Master includes plastic clips, rather than flimsy metal clips to attach the fans. The plastic clips are easier to install when working inside the case, which is necessary because you'll need to tighten the mounting clip screws with the fans off.

Benchmark temps for the Hyper 212 EVO were around 10 C lower than Intel's stock cooler, so the Hyper 212 EVO is



Hyper 212 EVO | \$34.99

Cooler Master | www.coolermaster.com

Specs: Socket compatibility: Intel LGA775/1155/1156/1366, AMD AM2/2+/3/3+/FM1; Materials: Copper (heatpipes), aluminum (fins); Dimensions: 159 x 80 x 120mm (HxWxD); Fans: 1 120mm; Airflow: 24.9 to 82.9cfm; Acoustics: 9 to 36dBA

definitely an upgrade. We'll also note that it's one of the most affordable coolers in the roundup, so it provides a lot of value for power users on a budget.

Rosewill RCX-ZAIO-92

This budget heatsink and fan combo helps to lower thermals and noise compared to a processor's stock fan. The RCX-ZAIO-92 uses a push-pin system, so you won't need to remove your motherboard to install the cooler. The heatsink features three copper heatpipes, and there are 45 aluminum fins. Rosewill includes a silent 92mm PWM fan that can automatically adjust between 600 and 2,500rpm.

To install the Rosewill RCX-ZAIO-92, you'll need to remove the fan so that you can reach the plastic clips on the fan side. The fan can be quickly removed and reinstalled. Each post on the universal mount has three slots that each correspond to an Intel socket—LGA1366, LGA1156, or LGA775. To install the cooler onto an AMD processor, you remove the Intel



RCX-ZAIO-92 | \$29.99

Rosewill | www.rosewill.com

Specs: Socket compatibility: Intel LGA775/1156/1366, AMD 939/AM2/2+/3; Materials: Copper (heatpipes), aluminum (fins); Dimensions: 138.4 x 58 x 105mm (HxWxD); Fans: 1 92mm; Airflow: 12.1 to 54.8cfm; Acoustics: 14.5 to 25dBA

mounting plates and install the AMD clips, which slip over the clips on AM3 and AM2 socket processors.

Compared to the Intel Core i7-2600K's retail cooler, the RCX-ZAIO-92 ran around 8 C cooler. In our benchmark tests, the cooler delivered temperatures of 80 C in Prime 95, 78 C in POV-Ray Beta, and 52 C in Orthos. At idle, the RCX-ZAIO-92 ran at 42 C. Combined with the lower noise of the PWM fan and the reduced temperatures, the RCX-ZAIO-92 is a solid upgrade for those on a budget.

Chilling Conclusions

For top performance, you can't go wrong with either Corsair's H100 and Antec's KÜHLER H₂O 920. We also saw good value from Gelid's GX-7, Cooler Master's GeminII S524, and ARCTIC COOLING's Freezer 13 PRO CO. We can safely say that all of these CPU coolers are a big upgrade over the retail cooler that comes with the 2600K. ■

BY NATHAN LAKE



Cool Your Graphics

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VGA Cooler

- Superior cooling performance
- Virtually-silent
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- Enhanced RAM and VR cooling



Galaxy GeForce GTX560Ti MDT X5

When you think multimonitor gaming, chances are AMD's Eyefinity is your first thought. That's because Nvidia's best stab at gaming on more than two monitors requires a second graphics card. All that changes with the Galaxy GeForce GTX560Ti MDT X5, a graphics card that lets you run up to five displays simultaneously.

As its name suggests, this is a graphics card based on Nvidia's GeForce GTX 560 Ti. It's a DX11 graphics card that features 384 CUDA cores, a 1GB GDDR5 frame buffer, and a 256-bit memory interface.

From a specs perspective, there's very little to distinguish this card from another GeForce GTX 560 Ti, but out of the box, it's immediately clear that this card is very different. The heatsink shroud is a single piece of brushed aluminum labeled "Galaxy MDT X5" on the left side of the fan and "Display 5" etched on the right side of the fan. The magic happens at the bracket: There's a DVI port, DisplayPort output, and a row of four mini HDMI ports along the top edge of the bracket. This card can support up to five concurrent displays and up to four of them in games in your choice of 2x2 stack mode (up to 2,560 x 1600) or 4x1 (up to 5,760 x 900) span mode. It also supports "smaller" configurations, including 3x1 span mode (up to 5,040 x 1,050).

To get a better look at the driving force behind Galaxy's unique MDT X5, we removed the heatsink shroud and found dual raised mezzanine PCBs upon which is soldered IDT's VMM1400EQG ViewXpand Multi-Monitor Controller IC. This chip utilizes a DisplayPort interface from the GF114 for input and outputs to four HDMI ports.

When connecting this card to three monitors, all we had to do was plug the extra displays into the mini HDMI ports in the correct order. When running with mismatched monitors, the card finds a resolution compatible with all three, but in our case, it cut off the edges of our larger monitors. We recommend using displays

with matched resolution capabilities, but if you can't, jump into the Nvidia control panel and create a custom resolution.

We did play games at the 3x1 configuration, and found playable frame rates in all three games we test with. Despite this, we ran the benchmarks on a single monitor at the resolutions specified, so you can gauge how this card will perform compared to a typical GTX 560. And even though Galaxy left the core clock alone, the copper-heatpiped heatsink signals some serious overclocking potential; with Galaxy's Xtreme Tuner utility, adding 100MHz to the core clock is entirely within reach.



Although the GeForce GTX560Ti MDT X5 will set you back significantly more than a stock GTX 560 Ti, that price is the result of some serious hardware improvements. Finally, multimonitor gaming is not only practical on Nvidia, but fun, too. ■

BY ANDREW LEIBMAN

GeForce GTX560Ti MDT X5

\$329.99

Galaxy

www.galaxytech.com

Specs & Scores	Gigabyte GeForce GTX 560	Galaxy GeForce GTX 560 Ti MDT X5
Core clock	830MHz	822MHz
Memory clock	1,002MHz	1,002MHz
Memory Interface	256-bit	256-bit
Memory	1GB GDDR5	1GB GDDR5
3DMark 11 Performance		
3DMark Overall	P4118	P4551
Graphics Score	3739	4177
Physics Score	9120	9166
Combined Score	3882	4208
Graphics Test 1*	17.79	20.09
Graphics Test 2*	18.11	20.26
Graphics Test 3*	23.78	26.27
Graphics Test 4*	10.81	12.04
Physics Test*	28.95	29.1
Combined Test*	18.06	19.57
Unigine Heaven		
FPS	20.5	16.3
Score	517	410
Games* 1,920 x 1,200		
Metro 2033 (AAA, 4XAF)	19.67	27
Just Cause 2 (4XAA, 16XAF)	57.91	54.57
Aliens Vs. Predator (4XAA, 16XAF)	27.1	29.6
2,560 x 1,600		
Metro 2033 (AAA, 4XAF)	11.67	19.33
Just Cause 2 (4XAA, 16XAF)	41.46	42.43
Aliens Vs. Predator (4XAA, 16XAF)	16.2	18.5
*fps		
Driver: ForceWare 280.26		
Test system specs: Processor: 3.47GHz Intel Core i7-990X; Motherboard: Intel DX58SO2; RAM: 6GB Patriot Sector 7 DDR3-1600; Hard drive: 600GB WD Raptor; PSU: Antec TruePower Quattro 1200		

ZOTAC ZBOX nano AD10 Plus

ZOTAC's ZBOX nano AD10 Plus is around the size of a portable CD player, so it fits nicely anywhere in your household. ZOTAC also includes features that make the ZBOX nano Plus an ideal addition to your entertainment center. For example, the package includes a Windows Media Center remote with playback, volume, and channel buttons. The attractive little system also has a VESA mount to let you attach the system to the back of a monitor and create a compact all-in-one system.

The ZBOX nano Plus is available in two configurations. The only difference between the two is that the Plus model comes with 2GB of SO-DIMM memory and a 320GB hard drive, while the ZBOX nano leaves out those items and costs less (\$219.99). On the front of the ZBOX nano Plus, you'll find a power switch, status indicators (power, HDD activity, and Wi-Fi activity), a 6-in-1 memory card slot, and headphone and mic jacks. There's also an IR receiver that supports carrier frequencies of 36kHz. If you opt to stash the ZBOX nano Plus behind an entertainment center door, ZOTAC includes an external IR receiver that you can connect to use the remote control.

The back of the ZBOX nano Plus features video outputs for DisplayPort and HDMI, and both ports can carry 7.1-channel LPCM digital audio. For I/O,

you have two USB 3.0 ports, two USB 2.0 ports, and an eSATA port. Between the USB 3.0 and USB 2.0 ports are a Gigabit Ethernet and Kensington safety lock ports. ZOTAC also includes an 802.11b/g/n antenna for Wi-Fi access, which is an ideal way to set up the ZBOX nano Plus in a location where Ethernet cables aren't easy to route, such as a kitchen or guest room.

As you can see, ZOTAC's palm-sized system is densely packed. The only thing it's really missing is an operating system, which you can install using a flash drive or an external optical drive. For everyday computing tasks, the AMD E-350 does an adequate job, though the performance of the 1.6GHz dual-core APU won't ever be enough to power current games at high resolutions, for example. Similarly, our benchmark results won't blow you away. Where the ZBOX nano Plus really shines is video playback. Both Blu-ray movies and HD streaming via Netflix looked superb. When connected to our home theater, we also thought the 7.1-channel audio sounded clean and crisp. We also like that ZOTAC was able to include a variety of I/O options (Bluetooth, Wi-Fi, USB 3.0, USB 2.0, eSATA, and SD memory cards), so it's easy to transfer content.

For less than \$300, the complete ZBOX nano Plus system offers quite a bit of value for HTPC buyers. ■

BY NATHAN LAKE



ZBOX nano AD10 Plus
\$299.99
ZOTAC
www.zotac.com

Specs: Processor: AMD Brazos E-350; GPU: Radeon HD 6310; RAM: 2GB DDR3-1066; Hard drive: 320GB Samsung Spinpoint M7E

Benchmark Results	ZOTAC ZBOX nano Plus
3DMark 11 Entry	
3DMark Overall	E715
Graphics Score	706
Physics Score	568
Combined Score	420
Graphics Test 1*	3.88
Graphics Test 2*	3.65
Graphics Test 3*	3.21
Graphics Test 4*	2.03
Physics Test*	1.68
Combined Test*	1.78
PCMark Vantage Pro 1.0	
Overall	2638
Memories	1756
TV And Movies	1532
Gaming	2150
Music	3034
Communications	2515
Productivity	2098
HDD	3385
SiSoft Sandra 2011 Lite SP4	
Processor Arithmetic	
Dhrystone ALU (GIPS)	8.6
Whetstone iSSE3 (GFLOPS)	9.83
Processor Multi-Media	
x8 iSSE3 (Mpixels/s)	13.45
x8 iSSE2 (Mpixels/s)	15.1
x4 iSSE2 (Mpixels/s)	12
Memory Bandwidth	
Integer Buffered iSSE2 (GBps)	3.04
Floating-Point Buffered iSSE2 (GBps)	2.99
Media Transcode	
Transcode WMV (KBps)	99
Transcode H264 (KBps)	93
POV-Ray 3.7 Beta**	
Cinebench 11.5 CPU***	0.59
Aliens vs. Predator (4XAA)	
Metro 2033 (4XAA)	5.3
*fps	
**pixels per second	
*** points	
Games tested at 1,280 x 720.	

OCZ Vertex 3 Max IOPS 240GB

One of the most desirable SSDs from the enthusiast perspective is this quarter-terabyte model from OCZ. It's the Max IOPS version of the company's Vertex 3 drive with a 2.5-inch form factor and a 6Gbps SATA interface.

Onboard the VTX3MI-25SAT3-240G is a controller that's become familiar by now, the TRIM-capable SandForce SF-2281VB1-SDC. The secret sauce that gives the SSD its "Max IOPS" appellation is premium Toshiba Toggle NAND. Feeding the SandForce controller's eight channels, this synchronous MLC memory is built on the 32nm process.

As a result, OCZ says, the drive is capable of enhanced throughput peaking at 85,000IOPS in write operations for 4KB files. The company also provides more steady state figures that are closer to the results you'll get as a user of the drive day in, day out. Look for everyday I/O performance closer to 65,000IOPS for random 4KB writes, and 55,000IOPS for random reads of 4KB files.

Before testing the Max IOPS, we made sure that its firmware had been updated to the latest edition as of this writing. Notice that our CrystalDiskMark results incorporate tests with both incompressible and compressible data. SandForce's controllers to date tend to favor the latter, using built-in compression hardware to accelerate performance with data that can be easily compacted, as opposed to files that are already compressed, such as many media files.

The Max IOPS costs a bit more than the regular edition Vertex 3, but its extra I/O with certain workloads makes it an understandable choice for the demanding user. ■

BY MARTY SEMS



Vertex 3 Max IOPS 240GB

\$529.99

OCZ

www.ocztechnology.com

Benchmark Results	OCZ Vertex 3 Max IOPS 240GB (firmware 2.11)	Patriot Pyro 120GB
CrystalDiskMark (default / 0x00)*		
Sequential read	491.8 / 499.4	204.6 / 476.5
Sequential write	235.9 / 476.7	149.1 / 503.8
512KB random read	438.1 / 434.4	200 / 457.6
512KB random write	202.4 / 459.2	148 / 498.6
4KB random read QD1	31.56 / 35.01	28.02 / 40.34
4KB random write QD1	83.09 / 87.16	79.71 / 150
4KB random read QD32	253.9 / 268.3	98.92 / 111.5
4KB random write QD32	150.2 / 367.6	144.6 / 366.1
PCmark 7 (points)		
Windows Defender*	5.6	5.66
Gaming*	17.19	16.93
Windows Photo Gallery import*	26.1	23.04
Windows Movie Maker video edit*	23.4	23.18
Windows Media Center*	8.25	8.19
Windows Media Player music add*	1.41	1.41
Application loading*	55.51	57.53
AS-SSD*		
Sequential read	508.67	205.33
Sequential write	225.42	139.05
4K read	17.25	21.47
4K write	70.75	111
4K-64Thrd read	248.92	94.12
4K-64Thrd write	183.69	133.63
*results in MBps		

Specs: Maximum read/write (advertised): 550MBps/500MBps; Maximum 4KB write (advertised): 85,000IOPS; Interface: 6Gbps SATA; 3-year warranty

Test system specs: Processor: Intel Core i7-2600K; Motherboard: MSI Z68A-GD65 (G3); GPU: Intel HD Graphics 3000; Memory: 4GB G.Skill DDR3-1600; Storage: Crucial RealSSD C300

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The Vengeance 1100 behind-the-head gaming headset delivers surprising audio quality and clear voice chat, and it's comfortable enough to wear for hours of gaming or long VoIP sessions. The 1100 works with both USB or analog connections.

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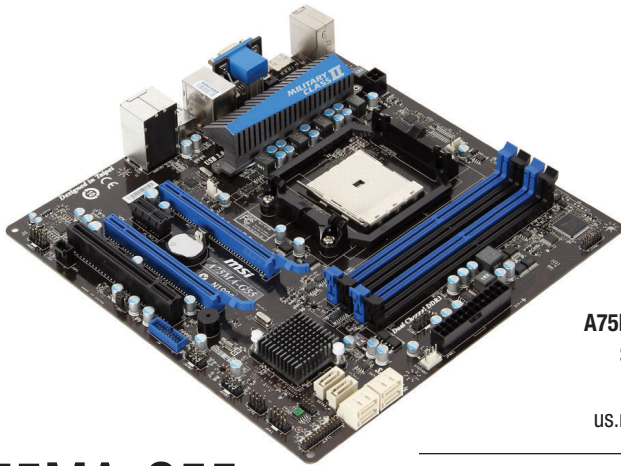
To learn lots more about the complete line of Vengeance PC gaming peripherals, please visit corsair.com.

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ANALOG GAMING HEADSET



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A75MA-G55
\$109.99
MSI
us.msi.com

MSI A75MA-G55

This compact mATX board is a great candidate for an HTPC or a secondary system. It would also be ideal as the foundation for a system built for a family member. It supports socket FM1 processors from AMD, such as the “Llano” Fusion APU with on-die graphics.

The A75MA-G55 comes with the AMD A75 chipset under a passive heatsink. The platform allows for a hybrid graphics approach using a compatible video card (such as a Radeon 6450, 6570, or 6670) and the ATI-descended pixel power baked into the processor itself. Dubbed AMD Radeon Dual Graphics, the feature can switch between the on-die DX11 APU graphics and a discrete video card for more demanding applications, such as 3D games. The board does support CrossFireX, but be aware that there’s an x4 speed cap on the second PCI-E x16 slot.

The A75MA-G55 is one of MSI’s Military Class II mainboards, meaning that it’s constructed with durable components for stability and longevity.

Various MSI features paint a pleasing picture. The i-Charger feature speeds up recharging of your USB devices, while USB Safeguard protects your gadgets as you plug them in. The ClickBIOS Concept clickable UEFI allows boot drives of 3TB and beyond (HTPCs like a lot of capacity) and invites even novice users to alter their boot device priority list with drag-and-drop ease instead of a call to their favorite power user. OC Genie automatically adjusts related settings to make overclocking accessible to more users, and the Winki 3 boot environment furnishes alternative, non-Windows access to the Web.

In the retail box of the A75MA-G55 you’ll find some extras that are actually useful. There’s an HDMI 1.3 cable, along with a couple of SATA cables rated for 6Gbps operation. Also present is an expansion slot bracket that lets you add an additional two USB 3.0 ports to the rear of the case.

Tinkerers take note: There’s no room for power or reset buttons on this microATX board. You’ll also have to clear the CMOS values via jumper. MSI sells plenty of other SKUs with enthusiast features; this one’s made for trouble-free operation.

That said, power is something to consider with this mainboard. In fact, MSI recommends that you use a power supply rated for less than 500W. Also, the RAM voltage specification is 1.5V, so buy your memory accordingly.

Also, if you want to use dual monitors with digital inputs, plan on installing a discrete graphics card. You can’t use the integrated HDMI 1.4 and DVI ports at the same time, although you can use either of these in addition to VGA.

We tested the A75MA-G55 with the latest BIOS version (1.2) and drivers at this writing. For results specific to the A8-3850 APU’s on-die graphics, see page 33 of the October issue.

Throughout our burn-in and testing, we had zero difficulties with the A75MA-G55. From where we’re sitting, MSI’s three-year warranty sure looks like a safe bet. ■

BY MARTY SEMS

Benchmark Results		MSI A75MA-G55
3DMark 11		Performance
3DMark Overall		P3696
Graphics Score		3719
Physics Score		3800
Combined Score		3399
Graphics Test 1*		17.49
Graphics Test 2*		17.61
Graphics Test 3*		22.46
Graphics Test 4*		11.25
Physics Test*		12.06
Combined Test*		15.81
PCMark 7		
PCMark Overall		3831
Productivity		3739
Creativity		3910
Entertainment		3841
Computation		2663
System Storage		5258
SiSoft Sandra 2011 Lite		
Processor Arithmetic		
Dhrystone ALU (GIPS)		46.35
Whetstone iSSE3 (GFLOPS)		34.7
Processor Multi-Media		
x16 iSSE2 (Mpixels/s)		49.49
x8 iSSE2 (Mpixels/s)		82.3
x4 iSSE2 (Mpixels/s)		44.89
Memory Bandwidth		
Integer Buffered iSSE2 (GBps)		14.51
Floating-Point Buffered iSSE2 (GBps)		14.51
Media Transcode		
Transcode WMV (KBps)		512
Transcode H264 (KBps)		498
Cinebench 11.5		
CPU**		3.47
POV-Ray 3.7 Beta***		708.11
Games*		1,920 x ,1200
Aliens vs. Predator (Very HQ, Shadows High, 4xAA, 16xAF, SSAO On, HW Tess., Adv. Shadows)		27.1
Metro 2033 (DX11, Very High Quality, 4x MSAA, 16XAF)		21
*fps		
**Points		
***Pixels per second		
Specs: Socket FM1; Chipset: AMD A75; Max memory: 32GB (DDR3-1600); Slots: 2 PCI-E x16, (1 x16, 1 x4 speed), 1 PCI-E x1, 1 PCI; Storage: 6 GBps SATA; Rear I/O: PS/2, HDMI, VGA, DVI-D, 4 USB 2.0, 2 USB 3.0, Gigabit Ethernet, audio I/O		
Test system specs: Processor: AMD A8-3850; Graphics: Gigabyte GeForce GTX 560 OC; RAM: 8GB G.Skill Ripjaws DDR3-1600; Storage: OCZ Vertex 3 Max IOPS 240GB; PSU: Corsair HX620W		



FrozenQ PC Mods Liquid Fusion Dual Bay Reservoir

When you are into watercooling your PC, you want to be cool and “cool.” You want to make sure that your CPU, GPU, and other important components are getting the best cooling they can and you want the interior of your rig to look cool enough to show off. The reservoir is a key part of your watercooling system, so why not make it look great at the same time? FrozenQ PC Mods’ Liquid Fusion Dual Bay Reservoir can help you accomplish both of these goals.

As its name suggests, this reservoir will fit into any two unused bays in the front of your computer case. FrozenQ CNC-mills this reservoir from a solid block of acrylic, adding one G1/4 fill port on top and three ports at various locations on the rear of the reservoir, making it easy for you to connect your

cooling loop and maintain the routing you need to make your build work. The Liquid Fusion Dual Bay comes with two fill plugs to block off whichever ports you choose not to use, as well as the mounting hardware you’ll need to fit it into just about any system.

The front cover of the reservoir is made of clear acrylic to give you a great view of its inner helix design, which of course gives the FrozenQ’s Liquid Fusion Reservoirs their distinctive look. The helix consists of two 1/2-inch corkscrewed acrylic tubes running end to end inside the dual-bay enclosure.

FrozenQ offers this reservoir in several color combinations; the reservoir itself can be either black or clear, and you can order the twin tubes in any combination of three stock colors (Fluorescent Blue, Red, or Green), or you can specify custom

colors. A pre-installed UV cathode gives the fluorescent colors the kick they need to take the look over the top.

But there’s more to the Liquid Fusion Dual Bay reservoir than good looks. FrozenQ also incorporates a modular water pump mounting system that lets you install any pump you fancy, rather than locking you into a proprietary part, or of course you can choose not to mount a pump at all. This refreshing flexibility is yet another reason why this reservoir is such a great addition to your cooling loop. ■

BY DEWAYNE CAREL

Liquid Fusion Dual Bay Reservoir

\$109.99

FrozenQ PC Mods

www.frozenqpcmods.com

Aerocool Syclone II (Black)

It's plain that Aerocool is going for a "Star Trek" theme with the Syclone II, a follow-up to its previous Syclone case. The proof is printed on the shipping box ("To boldly go where no man has gone before") and on each side panel ("Star Cruiser"). Evidence is in plain sight up front, thanks to four blue LED-lit jet nozzles. What the steel-constructed midtower really emanates, though, is aggressiveness—something Aerocool believes every gamer is after. For all the Syclone II's flash, though, it also provides a good array of practical features.

Accompanying the jets is a windowed left side panel, which reveals the blue-coated motherboard tray, removable HDD cage, and seven meshed PCI slots, all of which are menacing in a good way when the LEDs located up front and on the back 120mm fan are at work. (The left panel affords holes to install an optional 120mm or 140mm fan.)

Meanwhile, the front-panel door is plastic but still has an ominous look, sporting a Transformers-ish style with V-shaped slotted vents and mesh grille. When open, the panel reveals four 5.25-inch drive bays and more slotted vents, though the door's inside plastic covering essentially renders the vents mute. The Transformers appearance continues on top, where USB 2.0 (two), audio I/O, and eSATA ports reside.

Inside, the motherboard tray includes an appreciated large hole for easier CPU cooler mounting, as well as grommets to route cables behind the tray. The back panel is watercooler-friendly, with predrilled, grommets, and the case's bottom features rubber pads and a mesh-covered opening with removable



filter for the PSU to sit on. All 5.25-inch (four) and 3.5-inch (six) drive mounting is tool-less, as is panel removal. Remove the middle 3.5-inch drive cage (which rotates 90 degrees), meanwhile, and there's space for video cards up to 400mm long.

Whether you deem the Syclone II's appearance (a version with red

trimmings is also available) gimmicky or an ideal complement to your "aggressive" gaming nature, the case offers enough useful design touches at a fair price to appeal to anyone. ■

BY BLAINE FLAMIG

Specs: Dimensions: 18.9 x 10.6 x 20.7 inches (HxWxD); Motherboard support: ATX, mATX; Bays: 4 5.25-inch external, 6 3.5-inch internal; Fans: 1 140mm front, 1 120mm back, 1 120/140mm side (optional); Ports: 2 USB 2.0, 1 eSATA, audio I/O

Syclone II

\$119

Aerocool

www.aerocool.us

msi™

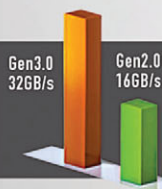
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TigerDirect.com

Diablotek EPIC

Here at *Computer Power User*, we know that many builders are looking for a chassis that will let them stretch a dollar as far as it can go. If you're a budget buyer, know that Diablotek has put together a practical case that combines good looks and a smart design for less than \$50. The EPIC is one of five midtowers from Diablotek with all the basic features you need to house a LAN-worthy system.

As we explored the outside of the EPIC, the glossy plastic front panel struck an attractive contrast to the matte finish on the rest of the exterior. At the peak of the anterior bezel are the power and reset buttons, both large and chrome-colored. The I/O row, just below, includes dual USB 2.0 ports, mic jack, headphone jack, and eSATA port in that order. Dense mesh coverings hide the three 5.25-inch bays as well as the single 3.5-inch external bay. The crown jewel on this side of the EPIC, a circular fan vent with a faux-chrome "d" logo, fills the rest of the front panel. Backlit with a blue LED, the 120mm fan light puts some pizzazz in an almost entirely dark case.

Aside from a stubborn, just-unboxed right panel, there's nothing difficult about getting your hands inside the case, thanks to the tool-less screws on both side panels. The five internal 3.5-inch bays reside in their designated cage, and one of the bays has a tray that will hold a 2.5-inch SSD.

Screw-less clamps that resemble pilot's wings pins adorn both sides of the optical drive cage. Unhinging them from their respective slots is simply a matter of twisting the center knob to the left. Before you start your build, we recommend bundling together the EPIC's front-panel cables and snaking them along the top panel so that they don't hang quite so catawampus over any optical drive installed in the top bay.

In addition to the single 120mm front fan, Diablotek includes two 120mm top-panel fans and one rear-panel 120mm fan. Your cooling expansion options are

located on the left panel, which sports the same mesh ventilation as the top.

For those who want to take advantage of the seven expansion slots, there is about 10 inches of space to fill until you reach the drive cages, but you could probably cheat a little by using the 3.5-inch external bay for an extra-long graphics card. Even a long PSU would rest comfortably on the four rubber supports in the bottom-only mount. The CPU cutout doesn't have a rounded edge, but it's plenty big, so you have enough room to fasten everything down. There are also two watercooling grommets on the back panel just above the fan.

At 12.76 pounds, the EPIC isn't the lightest case in Diablotek's ATX series,

but it matches the weight of its EVO companion. The DIAMOND and ELITE midtowers both weigh in at 9 pounds, whereas the LEGEND tops out at 10.6 pounds. Ultimately, the EPIC chassis is still a lightweight, and it takes home the title belt in this review. ■

BY JOANNA CLAY



EPIC
\$49.99
Diablotek
www.diablotek.com

Specs: Dimensions: 18.5 x 7.48 x 17.08 inches (HxWxD); Materials: Steel, plastic; Motherboard support: mATX, ATX; Bays: 3 5.25-inch external, 1 3.5-inch external, 5 3.5-inch internal (1 2.5-inch SSD tray); Fans: 1 120mm front (blue LED), 1 120mm rear, 2 120mm top, 2 80/90/120mm side (optional); Ports: 2 USB 2.0, 1 eSATA, audio I/O



Rosewill RK-9000

The keyboard you choose can be just as important as the tower, monitor, or mouse. And if you're a gamer, you know how crucial it is to have responsive keys when you're in the heat of battle. Rosewill's RK-9000 is a mechanical keyboard with multiple features designed to lend your hands a hand when quick, accurate keystrokes make the difference between victory and defeat.

The RK-9000 has a subtly stylish design. It also has a lot of weight to it and feels durable. We can definitely see gamers taking this with them to LAN parties.

The keys are highly responsive. Rosewill built the keyboard with Cherry MX Blue keyswitches, designed to be antighosting as long as you use the PS/2 connection.

(The RK-9000 offers 6-key rollover if you connect via USB.) We found that it did allow us to actuate multiple keys at a time without interference. This is an obvious benefit for playing games that require quick and simultaneous key presses. A PS/2-to-Mini-USB cable and USB-to-Mini-USB cable are included in the box. Both cables are braided, which not only gives them a high-quality look but also makes them less prone to damage during transport.

The only minor issue with the RK-9000 is the loud clicking noise with each key press, but it's to be expected with mechanical keyboards that use MX Blues and is something you can easily get used to over time (and some people just prefer

MX Blue switches over other varieties). Still, if you prefer mechanical without the click, Rosewill will soon release new mechanical keyboards with noticeably quieter Cherry MX Brown, Red, and Black switches.

The best word to describe Rosewill's RK-9000 mechanical keyboard is "solid." It's solidly designed, solidly built, and would be a solid addition to any gaming setup—hardcore or casual. ■

BY JOSH COMPTON

RK-9000
\$99.99
Rosewill
www.rosewill.com

Specs: Interface: PS/2, USB; Dimensions: 1.52 x 17.32 x 5.43 inches (HxWxD); Weight: 3.54 lbs; Antighosting: N-key rollover (PS/2), 6-key rollover (USB); Switch life: 50 million clicks; Compatibility: Windows ME/2000/XP/Vista/7



Diablotek PSUL775

Diablotek is looking to carve out a name for itself in the low price/high performance category; so far, we've been impressed with the results. There's little question that 80 Plus power supplies deliver as promised, but getting that certification isn't cheap. Moreover, the extra value of having, say, 82% efficiency compared to 78% is debatable, especially if the price difference is significant.

Diablotek slips just under the 80 Plus radar at a top efficiency of 79%. Combine this with a price tag under \$70, and your first impression might be, "Yuck, cheap gear." Well, hold on. Even for those of us who run a high-end GPU, powerful CPU, and a few drives, 500 to 600W is plenty. The 775W max rating for this Diablotek still leaves some margin for growth.

Also note that this unit is from Diablotek's UL series. In the budget category, it's common for vendors to use ETL (formally ETL SEMKO, and previously Edison Testing Laboratory) for their quality validation. UL (Underwriters Laboratories) uses a more stringent set of requirements and testing, which is why the medical industry demands UL certification. So, with features such as a double forward circuit, over- and undercurrent protection, short circuit

protection, and capacitors rated to 105 degrees Celsius, the quality assurance is better than a first glance might indicate.

Now, the PSUL775 is no beauty queen. Forget LEDs in the 140mm fan or chrome accents. It's just a plain, black PSU with full-length mesh sleeving. Noise output is acceptable, rated for 33.6 dB at 50% load and 39.3 dB at 100%.

Working on an Intel DX58SO2 platform, we Autotuned our Intel i7-980X to 4.13GHz at "Slightly Over Specification" settings and ran Prime95 64-bit on eleven threads concurrently with FurMark at 1,920 x 1,080. Average load was about 690W. Peak load observed over a 30-minute run time was 712W, with a top PFC of .750. Given that Diablotek recommends a maximum continuous load of 675W, we were very pleased with our results.

The bundled rubber noise-dampening bracket only sweetens an already impressive value. Once you look beyond the lack of 80 Plus certification, you'll see that Diablotek clearly overdelivers on its promises in this budget-oriented PSU.

BY WILLIAM VAN WINKLE

PSUL775 | \$69.99

Diablotek | diablotek.com

Specs	Diablotek PSUL775
Rated continuous (W)	675W @ 50C
12V rails	1
+12V max (A)	60A
+5V max (A)	30A
+3.3V max (A)	24A
SLI/CrossFire-certified	No
Max wattage tested	712W
Power factor tested	75%
Efficiency rating (advertised)	Up to 79%
Cable side	Motherboard
Fan location	Bottom
Fan(s)	140mm
PCI-E	4 (6+2-pin)
Main 12V	20+4-pin
EPS12V	2 (1 8-pin, 1 4+4-pin)
SATA	6
4-pin Molex	6
Floppy	1
Finish	Matte black
Length (including cable bend)	7.5 inches
Warranty	3 years
Test system specs: Processor Intel Core i7-980X @ 4.13GHz; Motherboard: Intel DX58SO2; RAM: 12GB OCZ DDR3-1333; GPUs: Sparkle GeForce GTX 480, GeForce GTX 470; Storage: Patriot Wildfire 240GB, Hitachi Deskstar 500GB (2x)	

VISIONTEK'S GUIDE TO BUYING THE RIGHT MEMORY

Whether or not you're currently in the market for memory, you're always in the market for a performance boost. Designed for every configuration, VisionTek's Performance, High Performance, and Ultimate Performance DDR3 memory lines all offer the superior timings, low latencies, and blistering reads and writes you're looking for in a new kit. Read on to find the right kit for your rig.



VisionTek Performance Memory

Like all of VisionTek's memory, the 8GB (2 x 4GB) PC3-10600 DDR3-1333 kit was built to VisionTek's strict standards for reliability and enthusiast-grade performance. This kit has a limited lifetime warranty and stock CAS 9 latency timings. VisionTek's Performance Memory is ideal for dual-channel AMD and Intel Core i3, i5, and i7 systems.

Best For: This memory is ideal for mildly overclocked systems, streaming video over wireless networks, and PCs running productivity, social networking, and 3D gaming applications.

Performance Memory:

- Available module capacities include: 1GB, 2GB, and 4GB
- Single-, Dual-, and Triple-Channel kits at 1.5V
- 9-9-9-24 latencies
- High Performance Gaming or Very Low Profile heat spreaders optional

VisionTek High Performance Memory

If you're looking for a step up in performance, look no further than VisionTek's 8GB (2 x 4GB) PC3-12800 DDR3-1600 kit. This is a very low profile kit that comes with a heat spreader to help cool the chips under load. This kit was built to last, and it, too, has a limited lifetime warranty to prove it. With CAS 8 latency timings, this kit is ideal for dual-channel AMD and Intel Core i3, i5, and i7 systems.

Best For: This memory is ideal for substantial overclocking and use with 64-bit operating systems as well as the latest AMD and Intel architectures in Dual-Channel or Triple-Channel configurations.

High Performance Memory:

- Available module capacities include 2GB and 4GB
- Single-, Dual-, and Triple-Channel kits at 1.65V
- 8-8-8-24 latencies
- Available with High Performance Gaming or Very Low Profile heat spreaders

VisionTek Ultimate Performance Memory

For an uncompromising computing experience, VisionTek's Ultimate Performance Memory, in the form of the 12GB (3 x 4GB) PC3-14900 DDR3-1866 kit is the way to go. Each of the three matched modules has stock CAS 10 latencies. The limited lifetime warranty lets you know that this kit will last. Choose VisionTek's Ultimate Performance Memory to get the most out of your triple-channel Intel Core i7 platform.

Best For: This memory is ideal for PCs and workstations used to run 3D rendering or non-linear video-editing applications, high-level overclocking, and online/offline gaming.

Ultimate Performance Memory:

- Available module capacities include 2GB and 4GB
- Single-, Dual-, and Triple-Channel kits at 1.65V
- 10-10-10-24 latencies
- Available with High Performance Gaming or Very Low Profile heat spreaders



Thermaltake Level 10 GT LCS

If you're not dead serious about wanting the most heavy-duty, fully loaded, built-like-an-M1-Abrams gaming tower, stop here. On the other hand, if you found Thermaltake's \$800, inside-out Level 10 cool in every way—except the price—read on.

The Level 10 GT LCS is a hybrid between the many-hinged, compartmentalized Level 10 and a conventional gaming tower, only now with a 273mm-long top-mounted radiator and a pre-installed BigWater pump occupying two 5.25-inch bays. Thermaltake also includes 1,000cc of coolant, a refill bottle, connectors, and all the 3/8-inch tubing you could need. Just know going in that this is a cut-and-crimp DIY watercooling setup, not a self-contained unit for newbies.

Aside from being the heaviest gaming tower we can recall, the Level 10 GT

LCS also features the best integrated cable management, bar none. The eight rubberized routing holes on the motherboard tray join a massive cutout for rear-side CPU heatsink access, and Thermaltake strategically places cable clips all around the tray's underside. The Level 10 GT LCS even has a special SATA power cable connecting all five internal drive bays, all of which are tethered back to a single Molex connector. These bays each feature a very basic connector backplane that supports hot swapping. The plastic sleds are impressively sturdy, although, unlike with the 5.25-inch bays, there is no tool-less drive mounting.

Four USB 2.0 ports and stereo/mic ports adorn the front panel, while one eSATA and two USB 3.0 (which are tied to internal header connections rather than a cumbersome pass-through

cable) ports rest on top just above high/low fan buttons and a fan LED button. The front and side fans happen to be Thermaltake's Colorshift LED fans, which can put on a multicolored light show if you choose. Louvered slats cover the inside of the side fan, and you can adjust their angle with an external lever.

Finally, a long window on the removable side panel offers visibility to the CPU and your watercooling prowess. After all, the Level 10 GT LCS is ridiculously awesome and not to be missed. ■

BY WILLIAM VAN WINKLE

Level 10 GT LCS

\$369.99

Thermaltake

www.thermaltakeusa.com

Specs: 23 x 11.1 x 23.2 inches (HxWxD); Motherboard support: mATX, ATX, E-ATX; Bays: 2 5.25-inch external (plus 2 5.25-inch bays dedicated for watercooling), 1 3.5-inch external, 5 2.5/3.5-inch internal; Fans: 1 200mm front, 1 140mm rear, 1 200mm side, 1 120mm bottom (optional); Ports: 2 USB 3.0, 4 USB 2.0, 1 eSATA, audio I/O



Calibre X560 DF
\$229.99
Sparkle
sparkletw.com/calibre

Sparkle Calibre X560 DF

We've hit that point in NVIDIA's product development cycle when the midlevel parts have a few months under their belt and card manufacturers are looking for ways to add value and renew consumer interest in their products. A couple of months ago, we looked at Gigabyte's overclocked version of the GeForce GTX 560, based on the GF114 chip, which raised NVIDIA's default 810MHz up to 830MHz.

Sparkle's Calibre X560 DF may lack some of the graceful design seen from Gigabyte, but it piles on an extra 100MHz overclock to the GPU and juices up the 1GB of GDDR5 an extra 120MHz. Not a bad difference, right? The additional speed produces roughly 8 to 10% better results in 3DMark 11. With Unigine Heaven cranked all the way to 4XAA and 16XAF at 1,920 x 1,080, we see a very respectable 20.5% improvement from the X560 DF. Results were similar in our game testing, with Aliens vs. Predator and Metro 2033 showing 25.1% and 23.7% gains, respectively. Curiously, in Just Cause 2 at 4XAA and 16XAF, the X560 DF delivered only the slightest benefit over Gigabyte GTX 560.

The X560 DF's packaging aims for simple and efficient. Beyond the driver CD, you'll get a DVI-to-VGA adapter, a pair of dual-Molex-to-PCI-E adapters for the card's twin 6-pin PCI-E power connectors, and a Calibre VIP membership card. This appears to be little more than a reminder to register the product. Doing so will extend the limited two-year warranty to three years, so it's probably worth your time and inbox traffic.

Like most GeForce GTX 560s, this unit has two DVI ports and a single HDMI output. The X560 DF's heatsink shroud gives the card a two-slot footprint, expectedly, so plan your onboard real estate accordingly.

As of this writing, we found Gigabyte's N56GOC available online for \$165 after rebates, and we know a price drop is imminent on the Calibre X560 DF. A small price hop for premium performance is to be expected, though, and Sparkle's card remains a sweet bargain. ■

BY WILLIAM VAN WINKLE

Specs & Scores	Sparkle Calibre X560 DF	Gigabyte GeForce GTX 560
Price	\$229.99	\$189.99
Core clock	930MHz	830MHz
Memory clock	1,122MHz	1,002MHz
Memory interface	256-bit	256-bit
Memory	1GB GDDR5	1GB GDDR5
3DMark 11 Performance		
Overall	P4488	P4118
Graphics Score	4106	3739
Physics Score	8863	9120
Combined Score	4305	3882
Graphics Test 1*	19.5	17.79
Graphics Test 2*	20.01	18.11
Graphics Test 3*	25.94	23.78
Graphics Test 4*	11.88	10.81
Physics Test*	28.14	28.95
Combined Test*	20.02	18.06
Unigine Heaven		
FPS	24.6	20.4
Score	620	514
Games*	1,920 x 1,080	1,920 x 1,200
Metro 2033 (AAA, 4XAF)	24.33	19.67
Just Cause 2 (4XAA, 16XAF)	59.87	57.91
Aliens vs. Predator (4XAA)	33.9	27.1
*results in fps		
Test system specs: Processor: Intel Core i7-980X; Motherboard: Intel DX58SO2; Memory: 4GB OCZ Gold DDR3-1333; Storage: Patriot Wildfire 240GB; PSU: Diablotek PSUL775; Windows 7 Ultimate 64-bit		

GIGABYTE GA-H61N-USB3

Intel's H61 Express chipset doesn't get a ton of play in enthusiast circles, as it's a mainstream chipset that lacks some of the high-end features found on P67 and Z68 boards. As GIGABYTE's GA-H61N-USB3 shows, however, overlooking this chipset completely would be a mistake, as it's an extremely cost-effective choice for putting together a Sandy Bridge-based SFF PC for a home theater or a host of other uses.

By virtue of its Mini-ITX form factor, the GA-H61N-USB3 can't carry quite the number of slots and ports roomier boards do, but it has what it needs to get the job done. Its dual memory slots support up to 16GB of DDR3-1333, and its lone PCI-E 2.0 slot provides full x16 throughput, so you'll have no trouble tapping this board for more HTPC power than you're likely to need, and it's no slouch where gaming is concerned, either. (Can you say uber-portable LAN box?)

The one size-related design item that's kind of a compromise is the fact that the board only has two SATA 3Gbps ports. In terms of internal storage, this means you have to either do without an optical drive or choose between a smaller, faster boot drive (SSD; tiny gaming rig) or a bigger, slower drive (HDD; HTPC). The good news is that a well-appointed NAS box remedies this nicely, and thanks to the H61N's eSATA port, you can also combine your Mini-ITX gamer with a huge external drive when you want access to your movie archive, then simply untether it to hit the road and game.

Because the GA-H61N-USB3 is a GIGABYTE board, you get all kinds of cool stuff built in, such as DualBIOS 3TB+ hard drive support, Japanese solid capacitors, Ultra Durable 2 power, and 3x USB Power Boost for faster gadget charges (even if your system is powered down). And in our tests, the board held its own against enthusiast boards costing several times as much.

If you have a friend or family member looking for a compact, inexpensive general-use PC, or if you're looking for just the right platform for a living-room PC or portable gamer, paring the GA-H61N-USB3 and the Sandy Bridge CPU of your choice should be at the top of your to-do list. ■

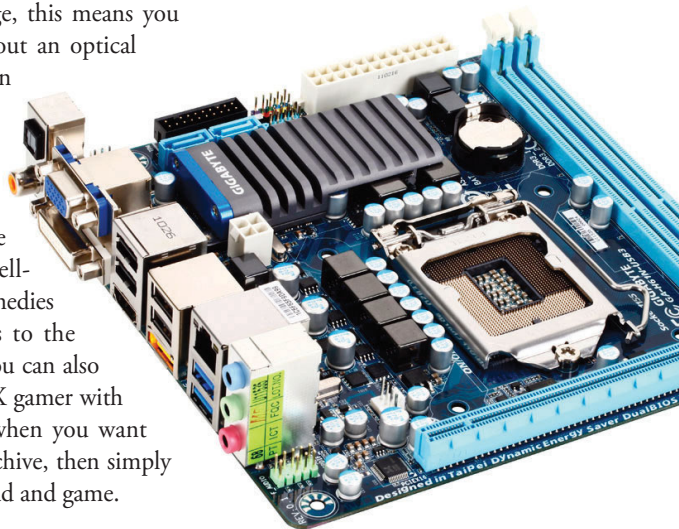
BY CHRIS TRUMBLE

GA-H61N-USB3

\$79.99

GIGABYTE

www.gigabyte.us



Specs: Socket LGA1155; Chipset: Intel H61; Max memory: 16GB (DDR3-1333); Slots: 1 PCI-E x16; Storage: 2 3Gbps SATA; Rear I/O: 2 USB 3.0, 4 USB 2.0, 2 S/PDIF (optical, coaxial), 1 eSATA, 1 HDMI, 1 Gigabit Ethernet, audio I/O, 1 DVI-D, 1 D-Sub

Test system specs: Processor: Intel Core i7-2600K; RAM: 4GB Patriot Sector 7 DDR3-1800 (defaults to 1,333MHz); GPU: Nvidia GeForce GTX 560 Ti; Storage: Patriot Pyro 120GB; Windows 7 Ultimate 64-bit

BENCHMARK RESULTS		GIGABYTE GA-H61N-USB3
3DMark 11 Performance		
3DMark Overall		P4441
Graphics Score		4099
Physics Score		7930
Combined Score		4299
Graphics Test 1*		19.87
Graphics Test 2*		19.42
Graphics Test 3*		24.78
Graphics Test 4*		12.16
Physics Test*		25.18
Combined Test*		20
PCMark 7		
Overall		4909
Productivity		4515
Creativity		5040
Entertainment		4879
Computation		4820
System Storage		4556
SiSoft Sandra 2011 Lite		
Processor Arithmetic		
Dhrystone ALU (GIPS)		136.6
Whetstone iSSE3 (GFLOPS)		82.64
Processor Multi-Media		
x16 iSSE2 (Mpixels/s)		202
x8 iSSE2 (Mpixels/s)		152.77
x4 iSSE2 (Mpixels/s)		83.4
Memory Bandwidth		
Integer Buffered		
iSSE2 (GBps)		14.46
Floating-Point Buffered		
iSSE2 (GBps)		14.47
Media Transcode		
Transcode WMV (KBps)		938
Transcode H264 (KBps)		988
Cinebench 11.5		
CPU**		6.87
POV-Ray 3.7 Beta**		1202.78
Games*		1,920 x 1,200
Aliens vs. Predator (4XAA, 16XAF)		29.4
Metro 2033 (4XAA, 16XAF)		23.67
*fps		
**Points		
***Pixels per second		

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 Foxconn A55A • price TBA
 Foxconn D250S • price TBA
 Foxconn D270s • price TBA
 GIGABYTE GA-H61M-DS2 • \$59.99 (www.gigabyte.us)
 SAPPHIRE Pure Platinum Z68 • \$189.99
 ZOTAC A75-ITX WiFi • price TBA

GRAPHICS CARDS

ASUS Republic of Gamers MARS II • \$1,499.99 (usa.asus.com)
 EVGA GeForce GTX 580 Classified • \$599.99
 PNY XLR8 Liquid Cooled GTX 580 • \$579.99
 PNY XLR8 Liquid Cooled GTX 580 with CPU Cooling • \$649.99
 SAPPHIRE HD 6850 Vapor-X Edition • \$169.99
 SAPPHIRE HD 6870 DIRT 3 Special Edition • \$209.99
 ZOTAC GeForce GTS 450 ECO Edition • \$139.99

MEMORY

Corsair CMSA8GX3M2A1066C7 8GB DDR3 (Mac) • \$54.99 (www.corsair.com)
 Corsair CMSA4GX3M1A1066C7 4GB DDR3 (Mac) • \$27.99 (www.corsair.com)

SSDS

ADATA S510 120GB • \$189.99
 Corsair Force Series 3 90GB • \$199.99 (www.corsair.com)
 Corsair Force Series GT 90GB • \$234.99 (www.corsair.com)
 Corsair Force Series GT 180GB • \$379.99 (www.corsair.com)
 Corsair Force Series GT 240GB • \$489.99 (www.corsair.com)

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ADATA SH12 USB 3.0 Portable • price TBA
 GIGABYTE GP-A2 External Hard Drive • \$142.99 (www.gigabyte.us)
 OCZ RevoDrive Hybrid 1TB • \$499.99 (www.ocz.com)
 Seagate 4TB GoFlex Desk Drive • \$249.99

CASES

Corsair Carbide Series 400R • \$99 (www.corsair.com)
 Diablotek FLY ATX • price TBA

NZXT Source 220 • price TBA
 NZXT Tempest 210 • price TBA
 NZXT Tempest 410 • \$79
 NZXT Tempest 410 Elite • \$89.99

COOLING

Danger Den DreamFlex Tubing • \$29.95
 Enermax ETD-T60-TB • \$64.99 (www.ecomasterstek.com)
 Enermax ETD-T60-VD • \$74.99 (www.ecomasterstek.com)
 GELID Solutions GX-7 Gamer • \$65
 NZXT Sentry Mix Fan Controller • \$29

POWER SUPPLIES

Enermax PLATIMAX 750W • price TBA (www.ecomasterstek.com)
 Enermax PLATIMAX 850W • price TBA (www.ecomasterstek.com)
 Enermax PLATIMAX 1050W • price TBA (www.ecomasterstek.com)
 Enermax PLATIMAX 1200W • \$319.99 (www.ecomasterstek.com)

PERIPHERALS

Belkin Keyboard Folio for iPad 2 • \$99.99
 Corsair Flash Voyager GT USB 3.0 64GB • \$129 (www.corsair.com)
 Corsair Flash Voyager GT USB 3.0 32GB • \$59 (www.corsair.com)
 Corsair Flash Voyager USB 3.0 16GB • \$24 (www.corsair.com)
 Corsair Flash Voyager USB 3.0 8GB • \$17 (www.corsair.com)
 Corsair Flash Survivor USB 3.0 16GB • \$35 (www.corsair.com)
 Corsair Flash Survivor USB 3.0 8GB • \$28 (www.corsair.com)
 Corsair Vengeance K90 Gaming Keyboard • \$129 (www.corsair.com)
 Corsair Vengeance K60 Gaming Keyboard • \$109 (www.corsair.com)
 Corsair Vengeance M90 Gaming Mouse • \$79 (www.corsair.com)
 Corsair Vengeance M60 Gaming Mouse • \$69 (www.corsair.com)
 Corsair Vengeance 1500 Gaming Headset • \$99 (www.corsair.com)
 Corsair Vengeance 1300 Gaming Headset • \$79 (www.corsair.com)
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 Logitech Gaming Mouse G300 • \$39.99
 Logitech Fold-Up Keyboard for iPad 2 • \$129.99
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 Logitech Joystick for iPad • \$19.99
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 Logitech Wireless Solar Keyboard K750 For Mac • \$59.99
 Logitech Wireless Touchpad • \$49.99
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 Razer BlackWidow Ultimate Stealth Edition • \$139.99
 Razer Tiamat 7.1 • \$179.99
 Rosewill RK-9000 Cherry MX Switch Keyboard • \$99.99 (www.newegg.com/rosewill)
 Zalman ZM-EC302 U3 Express Card To USB 3.0 • price TBA

ANTEC BUILDS A STEALTH PC

CALL US CRAZY, but over here at Antec we've found the perfect combination of stealthy gaming features and quiet performance. We've built a PC so quiet you have to keep looking at it to make sure it's actually running, and in this build we've included dual-SLI, an overclocked CPU, and a 750W PSU. Let's break down how it's done.

Case: Our compact powerhouse keeps a low profile from the inside-out. It all starts with our SOLO II midtower case, which minimizes noise thanks to sturdy 1mm-thick steel/polycarbonate construction. With this case you can mount your HDDs using tray mounts with silicone grommets or with the suspension mounting system. In terms of performance, SOLO II can handle beefy builds with GPUs as long as 15 inches—no sweat for our dual-GTX 460s.

PSU: You also get quiet performance with our High Current Pro HCP-750 PSU, which keeps cool with a PWM double ball bearing 135mm fan. It's 80 PLUS® Gold certified and includes a five-year warranty, so this will power your rig for a long time.

Cooling: Our KUHLER H₂O 620 highlights the latest generation of liquid-cooling technology and is easy to install for any level of builder. As we found out, the KUHLER is so durable that you can leave it attached to your motherboard if you're transferring it from one case to another. When installing the KUHLER, we moved the SOLO II's included rear TrueQuiet™ fan to the front of the case to improve airflow.



Other: We also threw in a little eye candy with two of our soundscience™ halo 6 LED bias light kit™ strips and a Spot Cool 100 blue LED fan, which you can mount anywhere on your motherboard to cool components such as GPUs.

Excited to get our system up and running, we pushed the power button, and the blue LED lit up. But we heard nothing spinning up. Where were the clicks and clacks of the HDDs? The humming of the KUHLER? All our fans were blowing air, but was everything okay? The Windows loading screen came up, followed by the login screen. No need to panic after all. Here we are sitting inches away from our system, and we can't believe this system's pristine silence.

You can still get the performance you want without the large footprint, gaudy aesthetics, and, above all, clamor that comes with a lot of builds out there. You can enjoy a PC like this in your home office or living room, and when you're not using it, you'll hardly even know it's there. ■



Cyclone

It's easy to see at a glance why Kirk "Gone Cruising" Carpenter named this mod "Cyclone." The system's gorgeous, laser-etched right side panel evokes images of chaotic, swirling winds—immense power packed into a tight space, which is an apt metaphor for the PC as a whole.

Carpenter says he spent about a year on Cyclone; he began the project with another design in mind and switched to a second before deciding on the look you see here. He built the case completely out of acrylic in his garage, which he has transformed into a workshop packed with workbenches, routers, sanders, drill presses, and his pride and joy, a CNC laser cutter and engraver.

Like many mods, Cyclone began as a concept in Google SketchUp. Carpenter built the case from scratch, using a clear acrylic panel for the right side. He painted the panel with Krylon Fusion black and then etched his design into the paint. He built the removable fan grilles from 1/8-inch acrylic and applied a mesh filter fabric to their insides with 3M adhesive. He replaced the stock black knobs on both the rig's Sunbeam fan controller panels with red LEDs, which he also worked into the twin Koolance waterblocks on his GTX 480 graphics cards.

Speaking of watercooling, Cyclone contains two loops. One is for the GPUs that includes the aforementioned Koolance blocks, a Feser Xtreme 360 radiator equipped with red Enermax Apollish 120mm fans, black Feser tubing, Bitspower fittings, Koolance quick-disconnect connectors, and an XSPC reservoir with a Swiftech pump. The second loop has the same radiator and fans, tubing, fittings, reservoir, and pump, but starts with an EK Full Board block, a Watercool HEATKILLER Rev. 3.0 CPU block, and a MIPS RAM Cooler block.

Cyclone's core components consist of an Intel Core i7-975 Extreme, EVGA's X58 Classified E759 board, 6GB of Corsair Dominator DDR3-2000, a Thermaltake Toughpower 1,200W PSU, and the two EVGA GeForce GTX 480 video cards.

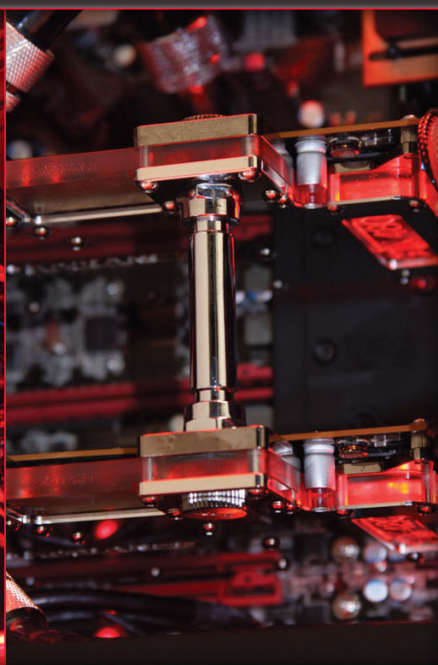
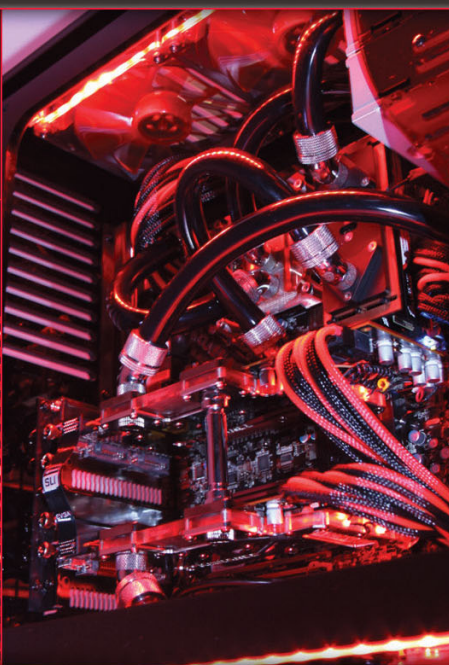
Carpenter's to-do list currently includes about 12 acrylic case projects for all kinds of systems and users. His goal is to go full time at some point with Lazerwerx, his own custom case and case accessory business that is currently in startup mode. Looking at Cyclone, we hope Carpenter gets all the time he wants to create more cases. ■





Give Us Your Mod

Have a computer mod that will bring tears to our eyes? Email photos and a description to madreadmod@cpumag.com. If we include your system in our "Mad Reader Mod" section, we'll send you \$1,500 and a one-year subscription to *CPU*.



Get informed answers to your advanced technical questions from *CPU*. Send your questions along with a phone and/or fax number, so we can call you if necessary, to q&a@cpumag.com. Please include all pertinent system information.

Each month we dig deep into the CPU mailbag in an effort to answer your most pressing technical questions. Want some advice on your next purchase or upgrade? Have a ghost in your machine? Are BSODs making your life miserable? CPU's "Advanced Q&A Corner" is here for you.

Ara M. asked: I have a Windows 7 desktop system with an OCZ 120GB SSD and a 1TB drive for data storage (movies, music, pictures, etc.). It's a real chore to back up my pictures and movies, so I would like to add another 1TB drive and create a RAID 1 array. I don't want to start fresh and reinstall everything. Can I just add one more 1TB drive and set up the RAID 1 array or will I need to perform a clean install?

A: First things first, a RAID 1 array is a good choice for your situation because it will create an exact copy (mirror) of everything on your data drive (yep, all those movies and photos) onto a second



Is the long and tedious process of backing up a single HDD wearing you down? RAID 1 is a foolproof backup.

drive. Should one of these hard drives fail, the remaining drive will still, most likely, remain operational long enough to repair the array by adding a new drive. Another way this beats constantly backing up your movies and photos is that it is automatic; anytime you add a new photo or encode another season of "Dr. Who," those files will be copied to the redundant drive.

Based on the description of your system, we're going to assume the 120GB SSD is your boot drive, so there should be no reason to perform a clean install on your boot drive just to RAID two 1TB data drives. Helpfully, Win7 lets you create a RAID 1 array right from the Disk Management utility. But before you get started, make one last backup of everything on your 1TB drive so you don't risk losing it if something goes wrong.

Next, shut down your system and add the second 1TB hard drive to a nearby SATA port. (Make sure they're both running on the same SATA controller.) Boot back into Windows and wait for Windows to recognize the new hard drive. Then, click the Start button, type **create and format hard disk partitions**, and press ENTER to launch the Disk Management utility. (You can also get there by clicking the Start button, right-clicking Computer, clicking Manage, and then clicking Disk Management from the tree on the left side of the screen.) If prompted, initialize the new hard drive using MBR. The new disk should be labeled "Unallocated" and have a black bar across the top. If not, right-click the new 1TB drive and delete the volume. Next, right-click the drive with your movies and photos installed on it and click Add Mirror. Select the fresh 1TB drive from the

dialog box and then follow the onscreen prompts to complete the operation.

Your original 1TB hard drive should remain visible from the Computer menu, but the new 1TB drive will vanish. In the Disk Management utility, the two drives will be visible, marked as dynamic drives and have a red bar across the top identifying them as a pair in RAID 1.

Spencer M. asked: I have an ASUS EAH5770 graphics card running at a stock 850MHz core clock and a 1,200MHz memory clock running over a 128-bit interface. After reading your reviews of the Radeon 6770 and your article on modding a Radeon HD 6950 into a Radeon HD 6970 by flashing the BIOS (*Editor's note: See page 47 in the June 2011 issue*), I was wondering if it was possible to BIOS-flash my way from a Radeon HD 5770 to a Radeon HD 6770. Have you tried this or do you know if this is possible?

A: We went back and looked at our review of the Radeon HD 6770, and sure enough, we make it sound perfectly plausible to flash a Radeon HD 5770 into a Radeon HD 6770. After all, as we pointed out in that review, the 6770 is little more than a rebranded Juniper sporting a spiffy new BIOS.

Now we have a question for Spencer: Why would you want to risk turning your Radeon HD 5770 into a useless hunk of silicon just to add 1,000 meaningless digits to the model number? To answer our own question, performing such an upgrade wouldn't do much for frame rates, but it would, at least in theory, add support for HDMI 1.4a, better known



Even if you were able to turn a Radeon HD 5770 into an HD 6770, why would you want to?

as Blu-ray 3D. (Oh, and there's the satisfaction you get from thumbing your nose at AMD's rebrand.)

The problem is, it's not as simple as a BIOS flash. Dave Baumann, a technical marketing manager for AMD, waded into the controversy to provide his expert opinion on why a simple BIOS flash is anything but: "It is not as simple as just providing a BIOS update. While we will provide reference BIOS settings, each individual variant of the 5700 from the partners will have their own individual BIOS." In short, there's no one-size-fits-all BIOS floating around out there that you could use to flash every 5770 into a 6770.

Baumann throws in another wrench, saying, "Additionally, the change to enable MVC (Multiview Video Coding) alters the operation of UVD somewhat, and both ASIC and board screen test programs have been updated to reflect this. While the likelihood of a 5700 not being able to run MVC is small, we cannot guarantee it because those test programs were not there previously."

As yet, we've seen no evidence that a flash-based upgrade is impossible, but there is no reliable or safe way to do it, either. If you still want to take the plunge, you can download a BIOS dump of the 6770 from a card as physically similar to your 5770 as possible (we found one on www.techpowerup.com) and then use a flashing utility to first save the existing BIOS to your PC and then flash the new one in its place. ATI Winflash 2.0.1.13 (bit.ly/hXbzDZ) supports Juniper GPUs and lets you flash the BIOS from within Windows.

Just remember, any time you flash your BIOS from Windows, make sure your system is stable and don't interrupt the process until it is complete.

Mark D. asked: AMD-based motherboards have recently included "native" USB 3.0 support, whereas to my knowledge, Intel-based motherboards still need additional chips to support USB 3.0. Are we expecting native USB 3.0 support on Intel boards anytime soon, and am I likely to notice a difference between the native support on AMD boards and the third-party support on Intel boards?

A: By native, Mark is referring to USB 3.0 technology being built into the chipset from AMD and Intel. AMD's A75 and A70M Fusion chipsets were the first from AMD to support

SuperSpeed USB in the chipset. As we went to press, the word on the street was that Intel won't release chipsets that support USB 3.0 natively until it launches Ivy Bridge, which is currently slated for Q2 2012.

You should experience very little difference between the performance of a native USB 3.0 port on an AMD system and a USB 3.0 port on an Intel board courtesy of an ASMedia or Etron host controller. The only difference you should experience is the need to install a supplemental driver for the non-native USB 3.0 controllers on Intel systems. The AMD systems that support USB 3.0 in the chipset should be able to get everything they need from the chipset driver. ■

BY ANDREW LEIBMAN

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TRENDnet 450Mbps Concurrent Dual Band Wireless N Router

2.4GHz & 5GHz Team Up For Unbelievable Throughput

Dual-band routers are nothing new, and routers offering 450Mbps data transfer speeds are nothing new. Put them together, though—with both bands offering the maximum currently available

data throughput speed—and you have a first-of-its-kind product.

TRENDnet's 450Mbps Concurrent Dual Band Wireless N Router (model TEW-692GR) is the first on the market

to feature data transfer speeds of 450Mbps on both the 2.4GHz and 5GHz bands, offering a total theoretical throughput of 900Mbps. With this type of dual-band router, customers could assign

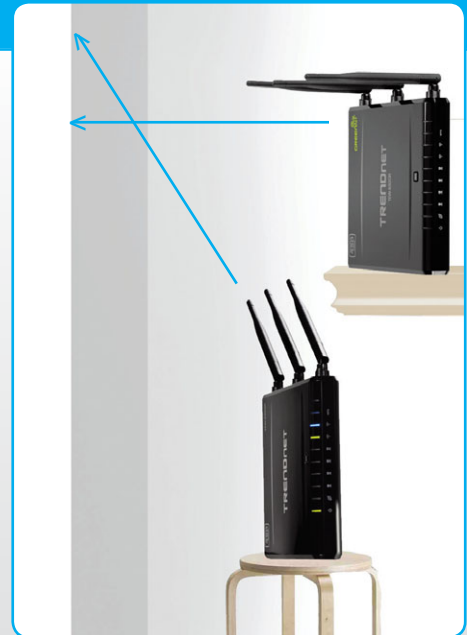
Improving Signal Strength

Achieving a strong, consistent signal in the 2.4GHz band of any wireless router, not just the 450Mbps Concurrent Dual Band Wireless N Router (TEW-692GR), can be a challenge, in large part because of the potential for interference from a variety of devices that also use the 2.4GHz band, such as cordless telephones. TRENDnet has provided some tips for improving the signal strength in the 2.4GHz band, as well as the 5GHz band.

- Try to reduce the major obstructions—walls, doors, and floors—between the TEW-692GR and any connected wireless devices.
- If you must pass the signal through obstructions, adjust the antennas to avoid sending the signal through denser materials. For example, if you know where the wooden or metal studs are inside your walls, try to position the TEW-692GR so the signal avoids these materials, passing through the surrounding

drywall instead. Try to go through thinner material, too.

- Do your best to place the antenna perpendicular to any obstruction to minimize the amount of material the signal must pass through, as shown in the example here. If a wall is 1 foot thick and the signal passes through the front of the wall at a 90-degree angle, the signal only travels through 1 foot of material, as shown with the upper router. However, if the signal is angled at 20 degrees to the front of the wall, the signal must travel through the equivalent of about 3 feet of material, shown with the lower router.
- Because a host of other electronics will quickly make enemies with any wireless router, keep as much distance between them as possible. RF interference can greatly degrade a 2.4GHz signal; TRENDnet recommends leaving 3 to 6 feet of distance



between RF-generating devices, such as microwaves, electrical devices, and radios, and the TEW-692GR. And even if a cordless phone is not in use, its base station can interfere with the signal, so avoid setting up your cordless phone and router as neighbors.

Love at first sight



Level 10 **GT**
Driving Inspiration

Snow Edition

Don't let the good look fool you. Level 10 GT – Snow Edition is a streamlined computer case engineered to accelerate cooling and offers full suite of technical features that redefines the definition of performance PC. Three oversized 200mm ColorShift fans and one 140mm TurboFan ensure your high-end graphic cards, CPU and hard drives are all quietly cooled. The keyword is "quietly". All intake fans come with built-in filter that can be easily cleaned without the use of any type of tools. Plug&Play side panel fan, 240mm high-efficiency water cooling radiator support and much more, to find out, visit us at www.thermaltakeusa.com. Are you in love yet?



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media-intensive applications to the 5GHz band, while freeing up the 2.4GHz band for data that isn't as dependent on perfect connections or for hardware that cannot make use of the 5GHz band.

"The typical scenario would be to stream HD video to one's media center using the 5GHz spectrum and to use the common 2.4GHz spectrum for wireless network

computers and other devices," says Sonny Su, TRENDnet's technology director.

TRENDnet's Router History

Last year, TRENDnet was the first company to release a single-band router (the TEW-691GR) that featured support for 450Mbps data transfer speeds on the 2.4GHz band.

"TRENDnet's TEW-691GR was the first router on the market to offer this new level of performance," Su says. "For TRENDnet, [the TEW-692GR] is on that same level."

Su says work on the TEW-692GR required a little more than one year. The decision to develop a product with 450Mbps speeds on both bands wasn't

Dual-Band Router Usage Scenarios

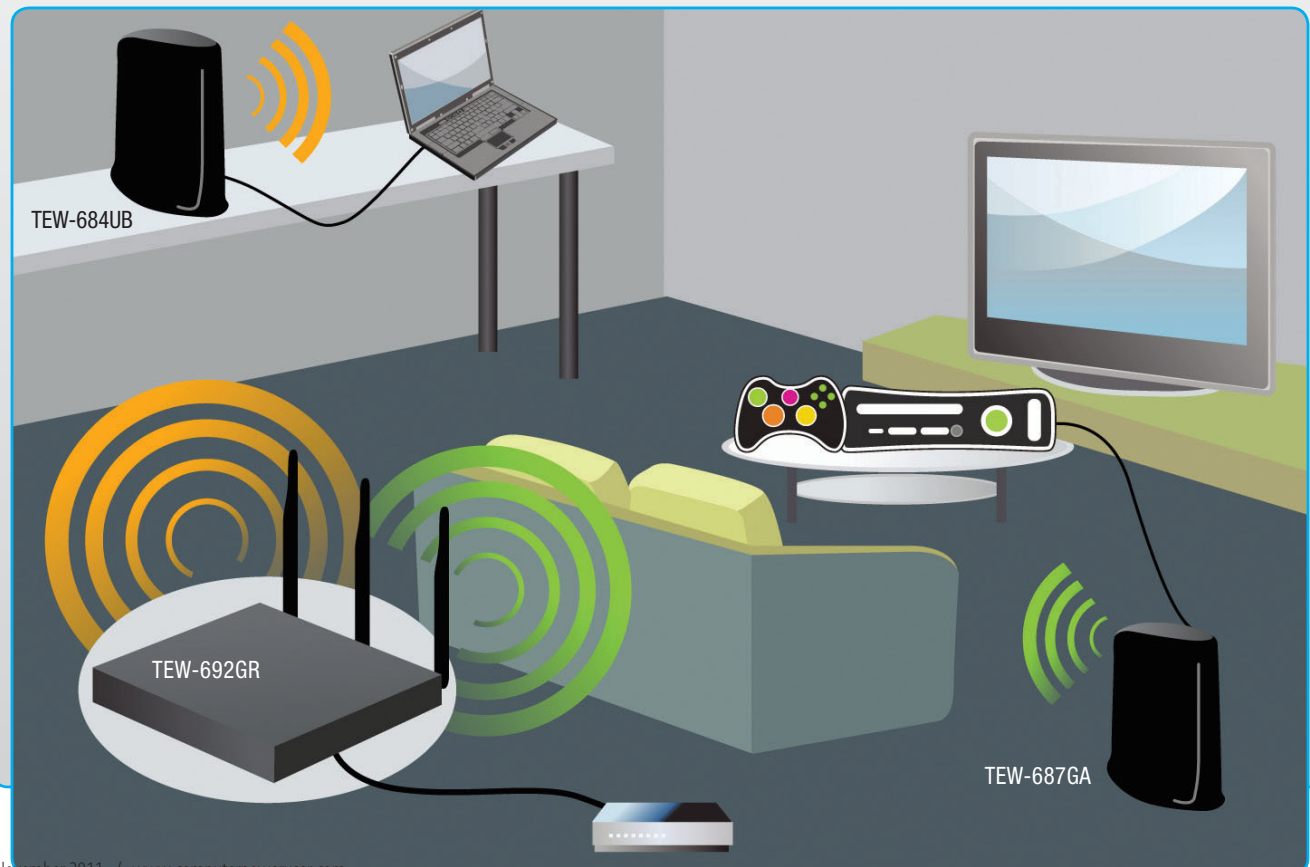
The TRENDnet 450Mbps Concurrent Dual Band Wireless N Router (TEW-692GR) allows for a variety of usage scenarios, depending on the hardware configuration you have.

5GHz band. The 5GHz band (shown here in green) is best used for data-intensive applications, such as streaming video or online gaming, where interruptions cause significant quality issues. The 5GHz band suffers from much less interference in a typical home or office setting than the 2.4GHz band.

2.4GHz band. The 2.4GHz band (shown here in orange) typically will be used for transmitting data with applications where minor interruptions don't cause critical errors. Additionally, a lot of hardware simply can't connect over a 5GHz frequency, making 2.4GHz the go-to band by default. Because

everyday household items such as cordless phones or electrical appliances operate on the 2.4GHz band, as well, a 2.4GHz wireless router signal can suffer from interference, a common problem shared by many routers that must operate on this band.

In the usage scenario shown here, the TEW-692GR's 5GHz band is working with the TRENDnet's 450Mbps Wireless Gaming Adapter (TEW-687GA); the tandem allows for a consistent signal and high throughput. Meanwhile, TRENDnet's 450Mbps Dual Band Wireless N USB Adapter (TEW-684UB) connects to the TEW-692GR over the 2.4GHz band. If the 2.4GHz signal suffers a few interruptions from interference, it probably won't cause a distraction significant enough to detract from the overall user experience; in fact, the user might not even notice it.



difficult; TRENDnet simply aimed for manufacturing a router with the best speed possible, which Su says is a trademark of the company.

"With respect to wireless routers, one of the most important components is the engine, or the wireless chipset, and

the fastest engines available today are 450Mbps," Su says. "We have an interest in being the first, or one of the first, to launch new high-speed wireless routers to market. TRENDnet first launched 300Mbps solutions. Then we started focusing on 450Mbps products."

TRENDnet's Router Future

You can expect TRENDnet to be working toward even faster routers in the future. The 802.11n specification, which the TEW-692GR supports, allows for data transfer rates up to 600Mbps, meaning there's room for more speed

Standout Features

In addition to its dual-band capabilities, the 450Mbps Concurrent Dual Band Wireless N Router (TEW-692GR) includes a long list of features.

Advanced filters. You can set the TEW-692GR to block certain Web sites or IP addresses, which TRENDnet technology director Sonny Su says is a feature primarily aimed at families.

Encryption. You'll find a full set of customizable encryption standards with the TEW-692GR, including WEP (64- or 128-bit), WPA, and WPA2. When using the WPA standard, the TEW-692GR attempts to use WPA2, which is a newer implementation of the security standard, but it defaults to WPA if the client doesn't support WPA2.

GREENnet. The TEW-692GR makes use of TRENDnet's proprietary GREENnet standard, which lets the router use up to 70% less energy than non-GREENnet routers. With GREENnet enabled, the TEW-692GR can determine when an Ethernet port is not being used, and it will place the port into an idle mode, conserving power, until it receives a signal. Additionally, GREENnet determines how much power to use to send signals through an Ethernet cable based on the length of the cable, meaning it can use the exact amount of power required each time.

"Buying a TRENDnet router with GREENnet technology is not like winning the lottery, but users will save a bit of money each month, since the router is always on," Su says.

QoS. The settings for QoS (quality of service) let you determine the percentage of bandwidth to devote to various applications. With QoS enabled, the router prioritizes applications that need reliable performance.

For example, when Wi-Fi Multimedia is enabled, the QoS for audio packets and video packets automatically is set to "high," giving those packets priority. Su adds that this can improve media streaming over the network.

SSIDs. The TEW-692GR supports up to four SSIDs on both the 2.4GHz and 5GHz bands. By supporting

four SSIDs on each band, the router can offer four virtual access points, essentially creating four wireless networks per band. Each of these virtual access points can have its own collection of security settings.

"This means a given family could create the 'kids network,' the 'home office network,' and the 'media center network,'" Su says. "Each network is independent of the others, and users can set different filters and security thresholds for each SSID."

WDS (wireless distribution system). This feature lets users extend the reach of their network by adding access points that connect to the original router.

WMM. WMM (Wi-Fi multimedia) provides a priority in the wireless network for multimedia applications, delivering the performance they need to run at an acceptable level. With the TEW-692GR, the WMM and QoS settings often work together.

WPS. With WPS (Wi-Fi Protected Setup), it's easy to connect the TEW-692GR to other WPS-enabled devices

simply by pressing the WPS button on both the router and the adapter. You don't have to enter encryption codes.

"WPS is a cool feature that can save time when performing that very first connection to the router," Su says.



once chipsets that can support 600Mbps are available. Then there's the upcoming 802.11ac specification, which will further increase wireless router speeds.

"Things are complicated enough in the wireless world, so we thought we would throw in yet another weird technology term," Su says with a laugh, referring to 802.11ac. "Some brands will continue working on 600Mbps Wireless N solutions, and other brands will jump straight to the new 802.11ac technology."

Su says TRENDnet is doing work on different routers, some with the top-end 802.11n data transfer speeds and others that will make use of the 802.11ac protocols.

"The first-generation 802.11ac products will most likely offer an amazing 1Gbps theoretical throughput," Su says. "Both technologies are over one year away, so we'll have a clearer picture midway through next year."

The high-end speeds of the latest single-band and dual-band wireless routers don't impress everyone. Su says he has read a couple of reviews of TRENDnet's dual-band router that call the ability to operate at 450Mbps on both the 2.4GHz and 5GHz bands a "gimmick." Su says those who say the TEW-692GR isn't useful simply aren't thinking about the possibilities.

"It's kind of like saying sports cars are a gimmick and not useful whenever

you pass a Ferrari or Lamborghini going 50 mph on the freeway. Many people buy performance cars and don't drive them fast. It's the same thing for dual-band routers. Dual-band offers real performance increases over a single-band router. However, moderate network users could do just fine with a good old high-performance 300Mbps single-band router."

Obviously, for those who feel like driving their wireless networks at around 50 mph, the TEW-692GR router would be overkill. However, for those who prefer a fast Lamborghini—actually, two of them—dual-band routers can deliver the desired speed. ■

BY KYLE SCHURMAN

TEW-692GR Components

Front-panel LEDs.

The front of the 450Mbps Concurrent Dual Band Wireless N Router includes a series of LED

status lights for determining when connections are active. From left, the lights are as follows: Power, WAN, LAN 1, LAN 2, LAN 3, LAN 4, the 2.4GHz wireless, the 5GHz wireless, WPS, and one placeholder light, reserved for potential future expansion.

Antennas. The right side of the router includes three external 5GHz antennas. You can rotate these three antennas nearly 360 degrees. The TEW-692GR can be mounted vertically, too, giving you more flexibility for orienting the antennas.

The three 2.4GHz antennas are internal. The TEW-692GR is different from some of TRENDnet's other dual-band routers because it uses separate antennas for each band rather than antennas that serve both bands.

The TEW-692GR's antennas support MIMO (multiple-input, multiple-output) technology, which should improve overall network performance by reducing the impact of low-signal spots and dead spots in your home.



TEW-692GR Specifications

Frequency bands: 2.4GHz and 5GHz

Wired hardware standards:

10Base-T (802.3), 100Base-TX (802.3u), 1000Base-T (802.3ab), Energy Efficient Ethernet (802.3az)

Wireless hardware standards supported.

802.11a, 802.11b, 802.11g, 802.11n

Data rates:

450Mbps (802.11n [2.4GHz and 5GHz]), 54Mbps (802.11g, 802.11a), 11Mbps (802.11b)

LAN ports: 4 (10/100/1000Mbps)

WAN ports: 1 (10/100/1000Mbps)

Antennas: 3 2.4GHz internal (2dBi), 3 5GHz external (3dBi)

FCC frequencies: 2.412GHz - 2.462GHz, 5.18GHz - 5.24GHz, 5.725GHz - 5.85GHz

Power consumption: 9.6 watts

Dimensions: 1 x 6.4 x 6.1 inches (HxWxD)

Weight: 6.2 oz

SOURCE: TRENDNET

SOURCE: TRENDNET



STRIKE-X GT BLACK

Case Type	Mid Tower
Material	SECC 0.6mm
Motherboards	Micro ATX/ATX
Chassis Dimensions	465mm (H) x 190mm (W) x 490mm (D)
Drive Bays	3x 5.25" (Exposed) / 9 x 3.5" HDD or 2.5" HDD
Expansion Slots	7
Max length space available for PCI slots	295mm
I / O Ports	1x USB 3.0 / 3x USB2.0 / Audio+Mic (AC'97+HD audio)

STRIKE-X ST BLACK

Case Type	Full Tower
Material	SECC 0.8mm
Motherboards	Micro ATX/ATX/E-ATX/XL-ATX/HPTX
Chassis Dimensions	635mm (H) x 230mm (W) x 700mm (D)
Drive Bays	4x 5.25" (Exposed) / 10x 3.5" HDD or 2.5" HDD / 1x 3.5"+2.5" HDD hot swap slot
Expansion Slots	10
Max length space available for PCI slots	430mm
I / O Ports	2x USB 3.0 / 2x USB2.0 / Audio+Mic (AC'97+HD audio)



Tool-free design

Retractable HDD rack in nicely painted blue color

Beautifully painted Motherboard plate in blue color

Cable management holes with rubber protection



PGS SYCLONE

From the PGS-R family

Case Type	Mid Tower
Material	SECC 0.6mm
Motherboards	ATX / Micro ATX
Chassis Dimensions	480(H) x 270(W) x 525(D) mm
Drive Bays	4 x 5.25" (External) / 1 x 3.5" (with adaptor) / 6 x 3.5" HDDs (Internal)
Expansion Slots	7 Slots
Max length space available for PCI slots	280 mm / 400 mm (HDD cage removed)
I / O Ports	2 x USB2.0 / 1 x E-SATA / Mic & headphone (AC'97 & HD audio)



Install 2x3.5" HDDs

PGS Qs-200

Small in Size, Big in Capacity

Case Type	Mini Tower
Material	SECC 0.6mm
Motherboards	Micro ATX
Chassis Dimensions	367(H) x 185(W) x 395(D) mm
Drive Bays	2 x 5.25" (External) / 1 x 3.5" (External) / 2x2.5" HDDs or 3x2.5" HDDs
Expansion Slots	4 Slots
Max length space available for PCI slots	340 mm
I / O Ports	3 x USB2.0 / 1 x E-SATA / Mic & headphone (AC97 & HD audio)



Are You Game Enough?

Authorized
dealers



For more details, please visit <http://www.aerocool.us>

APPALOOZA

2011

GPU's Annual Software Guide

Fair warning: Angry Birds didn't make the cut.

If you're like we are, though, that's a good thing. How often do you see "The Common Folk" using their high-tech devices for lowbrow pursuits? Have you ever wanted to punch a hole in a wall when your parents tell you they use their Core i7 machine primarily for "Facebooking and email"? Did you punch a hole in a wall? Was it their wall?

It's a shame but—show of hands—in all of our snobbery, is anyone among us really any better? That \$500 GeForce is good for what beyond gaming, again? We fill up our online shopping carts with nothing but top-shelf hardware, and the first thing we think about is frame rates. We spend small fortunes on killer liquid-cooling setups for the purpose of running Videogame XYZ faster. There's a reason "Yeah, but can it run Crysis?" has become such a popular meme in our geek subculture.

It's time to use that tower for more than the world's most expensive Xbox 360. (Seriously, remember the Origin Big O in last year's Dream PCs battle? Check out page 70 in the October 2010 issue for a refresher.) Every year, we scour the Internet, thoroughly searching each and every tube, in search of the best software around, and 2011 is no different. It's our mission to bring you a mountain of killer apps that will leave you wondering how you were ever able to survive without them. And the best part is that even if your PC can't run Crysis, we'd wager it'll be able to run all of these programs. Whether you need to get down to business or simply unwind after a long, hard day of punching holes in walls, we've collected dozens of choice titles that are perfect for power users.

We start with a big batch of disk and file utilities. As SSDs get faster and HDDs get fatter, having a handle on all your stuff is more important than ever. There's a good mix here for all of you NTFS OCD types, from perennial favorites like Paragon Hard Disk Manager and Ultimate Boot CD to the popular new kid on the block, Dropbox. And, of course, a few lesser-known (but not less capable) file wranglers have ridden into town, too. If you're ready to take your data to school, check out the all-star faculty we've assembled.

That nicely manicured file system won't really do you a bit of good if your system gets hacked to heck, which is why you also need to make sure your security setup is on lock. And yes, it's true that a healthy amount of skepticism and vigilance are every bit as important as any software (hint: U.S. Army NCOs stumbling upon Saddam's hidden gold is still just the plot of "Three Kings," not a legitimate opportunity for you to make millions by wiring 75 bucks to Western Union Baghdad in order to "bribe a customs official"). That said, it's never been a bad idea to download good software to watch your back. We invite you to find out more about the meanest guard dogs we keep in our kennel.

Now, when it comes to kicking back and relaxing, we know that even if you do have iTunes, you've dug a secret tunnel out of the walled garden in order to keep your options open. And options abound. The big news of 2011 for media players and managers was Spotify's arrival on U.S. shores, so we feel like that story's been told. But how much do you know about GOM Player, JW Player, or MPlayer? It's time to find out.

We're also not strangers to the (over)sharing of today's Internet, so we want to equip you with what we believe is necessary to survive all of the assorted lolcattery of Web 2.0. Yes, we've circled Google Plus, but we're also picking out plenty of not-social-networking apps we think you'll dig. Surfing the 'Net hasn't been this much fun since the phrase "surfing the 'Net" was new and exciting.

And to bring our coverage full circle, we know that your system probably can run Crysis—two times over, no less. We wouldn't be doing our duty if we didn't submit our favorite choices for tweaking and benching your hardware. We've even thrown in benchmarking tools for Android and iOS . . . for the Angry Birds crowd, you know?

So pull your fists out of the drywall, take a seat, and check out the best software of 2011. ■

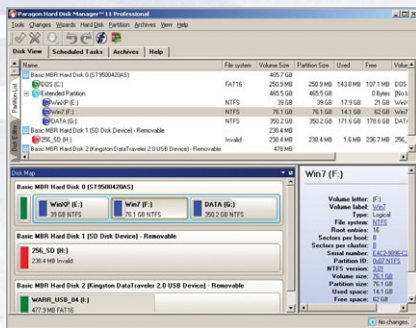
BY VINCE COGLEY



DISK & FILE UTILITIES

Put The 1s & 0s In Their Place

Hard Disk Manager 11 Professional
Paragon Software Group
www.paragon-software.com | \$99.95



Despite many free wannabes, we keep coming back to Paragon Hard Disk Manager Professional, and the 2011 version is no different. When it comes to creating, managing, backing up, cloning, resizing, or merging disks and partitions, nothing has proven so reliable, feature-filled, or easy to use. It works either directly from Windows or from WinPE (or Linux-, or DOS-based) boot CDs. It can migrate an existing Windows installation to new hardware and inject the appropriate drivers. It can make virtual machine images from partitions or vice versa. It can let WinXP use drives larger than 2.2TB. It truly does it all and is definitely worth the price.

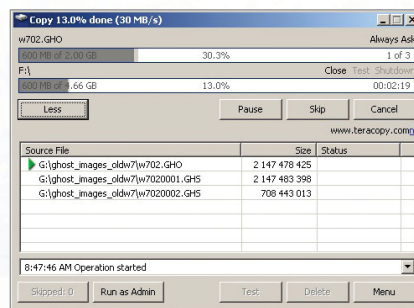
FILERECOVERY 2011 Standard
LC Technology International
www.lc-tech.com | \$69.95

Accidental deletion or formatting, viruses, or broken hardware are all common causes for losing valuable data, but for getting it back, FILERECOVERY 2011 is our first choice. FILERECOVERY 2011 actively scans the raw sectors of nearly any storage device Windows recognizes. It then stitches



together whole files from the pieces it finds. FILERECOVERY isn't always successful, but we've used it to recover lost photos, office documents, and multimedia files other recovery tools didn't even think ever existed. Just tell it to find everything it can on a disk or give it some search parameters, cross your fingers, and let 'er rip.

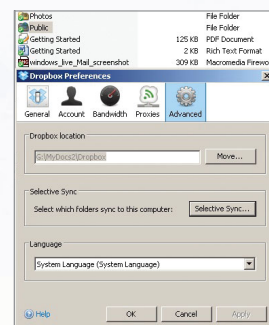
TeraCopy
Code Sector
www.codesector.com | Free



When you need to copy just a few files, Windows' own copy routines are fine. When you need to copy thousands of files, Windows needs help. If there's any sort of problem copying even one file, the whole process stops dead, and you have no idea which file was problematic (or the last file that copied). TeraCopy solves this and

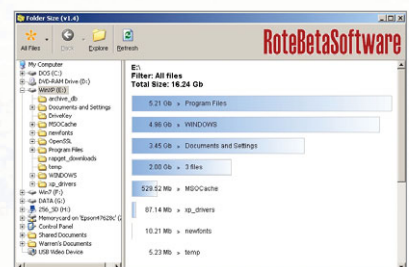
other annoying file copying problems. It tightly integrates with Windows' pop-up menu and can optionally replace Windows' own routines completely. It makes multiple attempts to copy problem files, skips them over and continues copying the rest if it ultimately fails, and lets you know what happened, all while using a faster multithreaded copy routine.

Dropbox
The Dropbox Team
www.dropbox.com | Free (Basic)



Dropbox is a handy little backup and file syncing program and Web storage service, making whatever files and folders you specify available to you anywhere, any time, on almost any device you own. Versions exist for Windows, Mac, Linux, BlackBerry, Android, and iOS; desktop versions basically sync your files to the Dropbox storage cloud and each other seamlessly, quickly, and in the background, while the portable versions generally just provide direct access to your storage cloud (which, by extension, means the files on your computer). The Dropbox crew gives you 2GB of free storage, and extra space is cheap.

Folder Size
RoteBetaSoftware
www.rotebetasoftware.net | Free

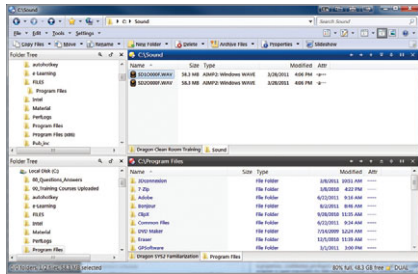


When you bought that 1TB hard drive, you probably thought, “I’ll never need to worry about free space again.” Later, inevitably, you ran out of space and discovered Windows has next to no tools for figuring out where it all went. Although there are tons of tools that claim to help you figure out what folders are consuming the most space, Folder Size pairs the conventional folder tree scheme with bar graphs that are easy to read and understand. Both the graphs and the tree are clickable, so drilling down into a huge folder and finding large files is intuitive and fast.

Directory Opus 10

GPSoftware

www.gpsoft.com.au | \$90



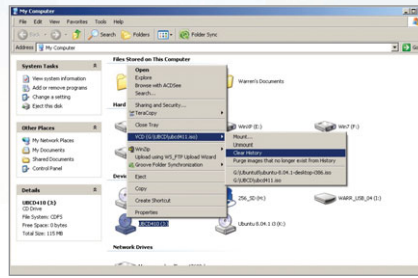
Although we recently proclaimed Directory Opus 9 the best Windows Explorer replacement, version 10 just came out, and it’s even better. It still offers the tradition dual-pane arrangement, but you can quickly “go Commander” if you’re even more traditional. All the power tools, such as folder sync, bulk file renumber, and FTP are still there, but each has useful tweaks (such as better proxy server support or better Win7-esque visual cues). Most have speed enhancements, too. We know Directory Opus is expensive, but there’s simply nothing better.

Virtual CloneDrive 5.4.5.0

SlySoft

www.slysoft.com | Free

Being able to emulate an optical drive used to simply be a luxury, but with many new laptops cutting out ODDs altogether, and with some software being distributed via ISO files, the ability to mount a disc image as if it were a physical drive becomes a necessity. Windows doesn’t (yet) let you



mount an ISO, but Virtual CloneDrive does. Double-click a disc image file (half a dozen formats are supported), and it instantly appears as a virtual CD or DVD along with a drive letter. Although the file is read-only (just like a physical optical disc), you can mount up to 15 discs at once, and they’re lightning-fast.

Ultimate Boot CD 5.1.1

www.ultimatebootcd.com | Free



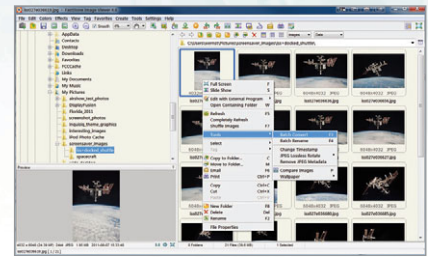
It’s hard to believe, but there are still hardware utilities, such as BIOS updaters and low-level drive formatters, that expect to be run from a bootable floppy disk. Do you even have a floppy disk drive? Odds are, however, that any utility that’s likely to require a bootable floppy is already a part of the Ultimate Boot CD. UBCD combines more than 100 utilities, all categorized by a boot menu according to topics such as BIOS tools, boot management, CPU and RAM testers, data recovery, partition management, and so forth. New to version 5 is the inclusion of Parted Magic, a graphical partition manager.

FastStone Image Viewer 4.6

FastStone Soft

www.faststone.org | Free

When you want to view huge catalogs of image files quickly, there’s nothing better than FastStone Image Viewer. In the blink of an eye, it generates image thumbnails from directories, displays images and

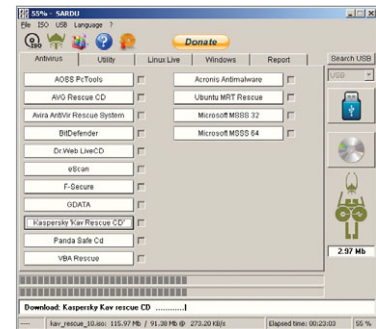


slideshows, and it provides access to editing tools when you roll your cursor to a screen’s edge. It also has batch resizing and renaming tools, prints multiple images on a page easily, and handles all the major (and some obscure) graphics file formats. Its file management tools are good, too, meaning you can totally do away with Windows Explorer.

SARDU 2.0.3

Davide Costa

www.sardudc.it | Free



What would you say if we told you there was a program that could download dozens of the most popular bootable CDs from the Internet and combine them into a single bootable CD, DVD, or USB flash drive? If your answer was “Shut up and stop lying to me,” then allow us to introduce you to SARDU. It organizes downloadable discs into the following groups: antivirus programs, general utilities, live Linux distros, and Windows PE and recovery discs. You can also add your own software. Once downloaded, SARDU can burn a new disc, produce an ISO, or make a bootable thumbdrive. It’s like making one utility and rescue disc to rule them all. ■

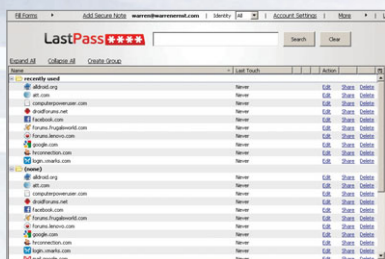
BY WARREN ERNST

SECURITY & PRIVACY TOOLS

Protect The Castle With These Apps

LastPass 1.75.0

lastpass.com | Free

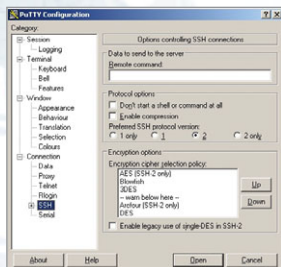


We all know we shouldn't use the same password everywhere we go. We shouldn't write passwords down, and they shouldn't be easy to guess. Sure, these guidelines are easy to follow if you have a photographic memory, but for the rest of us, LastPass is the best way to manage that pile of passwords. LastPass automatically learns, stores, syncs, and "plays back" your passwords (and, optionally, your other info) on all your browsers, computers, and (with the \$12/year premium version) portable devices from one encrypted online vault, plus it offers tools for generating secure passwords, auditing existing ones, and much more.

PuTTY 0.61

The PuTTY Team

www.chiark.greenend.org.uk/~sgtatham/putty | Free
PuTTY is, at its most basic level, a terminal emulator, letting you (typically) connect to a



Unix or Linux machine from your Windows computer and run command-line programs. PuTTY can connect via Telnet, rlogin, and SSH protocols, but it's this last one for which PuTTY is famous. SSH refers to "secure shell," and PuTTY supports SSH, SSH-2, and (with conversion) OpenSSH keys and protocols, making it pretty much the *de facto* standard Windows terminal program for anyone concerned about how wide-open unsecure Telnet is. PuTTY can also act as a secure SOCKS proxy tunnel to your home router or computer, letting you browse the Internet in complete security from anywhere (such as, say, ahem, the office).

Norton Internet Security 2012

Symantec

us.norton.com/internet-security | \$69.99



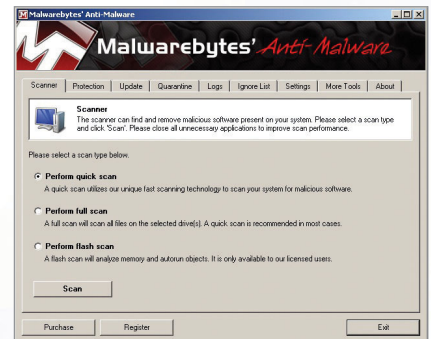
Viruses and malware come at you from all sides, but Norton Internet Security 2012 is (probably) the best overall tool to keep you safe. Its firewall, antivirus, and antimalware engines are updated from the 2011 version. They're as effective as ever and still won't slow down your computer unnecessarily. NIS 2012 harnesses the collective scanning of other Norton users to determine if a new-to-you executable is relatively common (and therefore safe) or absolutely unique (and therefore likely malware) and then acts

appropriately. It also rarely troubles you with obvious questions ("I found and identified a virus, so should I delete it?") but can provide lots of technical details if you're interested.

Malwarebytes Anti-Malware 1.51

Malwarebytes

www.malwarebytes.org | Free



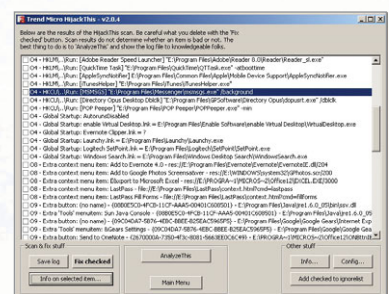
If your computer has been infected with malware before you had a chance to install security software, or perhaps you've been recruited to help clean someone else's computer, Malwarebytes Anti-Malware is the automatic tool most likely to clean the machine. Just install it, let it update (or transfer the latest updates from a clean machine), and perform either a quick scan or full scan. Then, let it remove what it wants to remove. The pro version (\$24.95) can perform a super quick scan of only startup objects, as well as perform real-time background malware blocking, but the free version's foreground scanner does the job most of the time.

HijackThis 2.0.4

Trend Micro

free.antivirus.com/hijackthis | Free

Most of the time, automated system cleaning tools can remove malware well enough to



get you going, but sometimes even they can fail. When you need to roll up your sleeves and remove malware by hand, HijackThis should be your go-to tool. HijackThis snoops into all the common and uncommon hidey-holes malware likes to live in (such as the Run and RunOnce areas in the Windows Registry, Browser Helper Objects, Explorer Toolbars, etc.) and displays them all in a list with checkboxes. If something seems like malware, just check what you want removed, and away it goes. If you aren't sure what to remove, save the log and post it to one of the many forums where experts hang out and offer to look at them.

Tor

The Tor Project
www.torproject.org | Free



Should your employer, your enemy, your government, or your ISP care to see what Web sites you visit and what data you transfer, it is trivial to eavesdrop on the network traffic and figure it out. For users concerned about this, there's Tor, which is both an encrypted "onion-skin" network and software package that work together. The software acts as a SOCKS proxy server on your PC; point your software to it, and your data is encrypted and passed around a network of proxy servers on the Internet before it connects to the site, rendering you and your data essentially anonymous.

TrueCrypt 7.1

TrueCrypt Foundation
www.truecrypt.org | Free

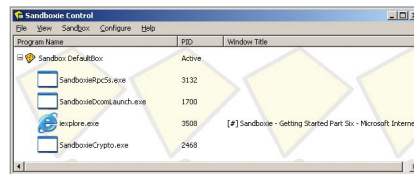
Whether you need to encrypt a part of your hard drive (just to store data), a hidden partition within a partition (for plausible deniability), or the whole shebang (including your OS), it's hard to do better than TrueCrypt. TrueCrypt utilizes 256-bit AES



encryption (or other methods if you choose) and drivers to create an encrypted drive on your computer with its own drive letter. Use the software's preboot authentication, and Windows will happily run from a TrueCrypt-encrypted OS drive. TrueCrypt is, amazingly, free (and open-source) and incredibly efficient, humming along with virtually no performance slowdown.

Sandboxie 3.58

Ronen Tzur
www.sandboxie.com | Free

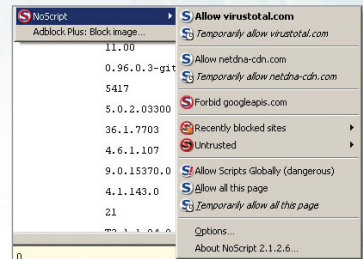


If you aren't sure about the legitimacy of an application, or perhaps when you visit Web sites you suspect to be less than honorable, then running them in a sandbox is a good idea. Sandboxie is the easiest way to do it. Software running in Sandboxie's sandbox can't write files, write to the Registry, or even access many Windows API calls. Instead, Sandboxie writes those calls in its sandbox and automatically deletes them when it closes. We've executed malware in the sandbox and chuckled as their payloads just disappeared, and we've observed keyloggers fail to collect keystrokes from apps running in the sandbox.

NoScript 2.1.2.6

Giorgio Maone
noscript.net | Free

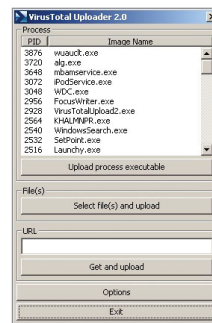
The vast majority of malware you encounter in the wild comes from "infected" Web sites, which are Web sites that make your browser execute scripts especially written to force-download malware to your computer.



Sometimes even honest sites start serving up bad scripts because the banner ads they display come from an advertising network that itself might be compromised. Firefox users concerned about this should download and install NoScript immediately, as it basically stops all JavaScripts (and, optionally, Flash/Java/Silverlight content) from executing. When you encounter sites that simply won't function without JavaScript (Google Docs, for example) you can selectively re-enable scripting via the toolbar or pop-up menu.

VirusTotal Uploader 2.0

Hispasec Sistemas
www.virustotal.com | Free



You can generally only install one antivirus product on a computer at a time, but wouldn't it be great if there was a way for many antivirus utilities to scan a suspect file? Say hello to VirusTotal, an online service that accepts your uploaded files and scans them with nearly 40 commercial AV engines (such as Norton, McAfee, etc.) and reports the results. Its new companion utility, the VirusTotal Uploader, lets you easily upload not only batches of files but also any of the running processes on your computer. ■

BY WARREN ERNST

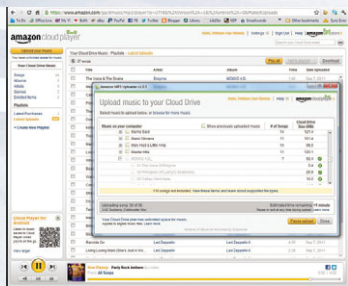
MEDIA PLAYERS & MANAGERS

Exceptional Entertainment Options

Amazon Cloud Player

Amazon.com

www.amazon.com | Free (5GB plan)

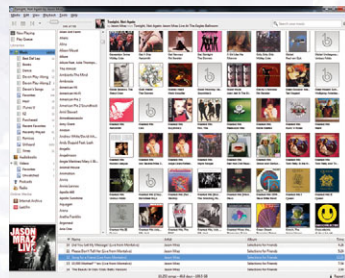


Amazon wants to be your digital content locker, starting with your music. Via a player app on the Web, Android device, or iPad, you can stream your MP3 and non-DRM M4A files straight from Amazon's cloud servers. Amazon gives you a free home for 5GB of music (and any other files) you upload and unlimited storage for all tracks purchased through Amazon MP3. Playback quality sounds much like Pandora (respectable given the streaming compression). You can make playlists, and the Cloud Player lets you download your tracks (uploaded or purchased) whenever you please. This is the champ to beat in cloud-based music services.

Banshee 2.0.0

Aaron Bockover, et. al.
banshee.fm | Free

We tried the 2.0.0 alpha version of Banshee for Windows, but this impressive media player is also available in a much more stable 2.1.4 version for Linux and has a 1.9.6 beta for Mac OS X. It supports syncing with devices ranging from iPods to the Barnes & Noble NOOK. Banshee lets you build a



playback queue, create smart playlists, and repair metadata in batches. Like iTunes, Banshee also supports DAAP (Digital Audio Access Protocol) for streaming your media across your LAN. Scrobbling and streaming via Last.fm are supported, and Banshee can also tie into eMusic and Amazon.com's MP3 Store.

WinDVD Pro 2010

Corel

www.corel.com | \$99.99 (full), \$69.99 (upgrade)



If you love Blu-ray, check out the latest WinDVD, which features an overhauled UI, advanced power controls for mobile playback, audio EQ and effects, and near-HD upscaling that actually looks pretty good thanks to AMD- and NVIDIA-based GPU acceleration support. The time scaling (for example, playing a two-hour movie in only 100 minutes) looks and sounds surprisingly impressive—no

noticeable frame dropping or helium voices. You can capture movie stills as BMP files or clips as silent animated GIFs. For video playback, WinDVD excels, spanning 3GPP, DVD, MPEG-2 HD, AVCHD, AVCREC, Blu-ray, and Blu-ray 3D (both NVIDIA 3D Vision and XpanD). The app also has BDXL certification for multilevel Blu-ray (up to 128GB/disc) support.

DivX Plus

DivX, LLC

www.divx.com | Free

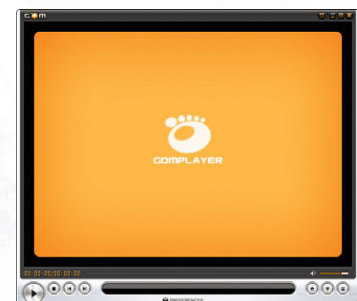


More than just another pretty movie player, DivX Plus looks something like an iTunes list view but acts a lot like a DLNA server. Sure, DivX lets you watch AVI, DivX, MKV, MOV, and MP4 files on your PC. But you can also use the bundled DivX To Go feature to optimize playback on any of the thousands of DivX-certified target devices. That could be anything from an Audiovox in-car head unit to a Samsung Android phone. If you love HD, you're probably familiar with the MKV container for H.264. DivX uses MKV to provide features such as smooth rewinding and fast-forwarding and subtitling in up to eight languages.

GOM Player 2.1.33.5071

GOMlab

www.gomlab.com | Free



GOM Player is for anyone who ever beat his head against Windows Media Player's codec limitations. This free player will handle practically every major format, including AVI, DivX, FLV, H.263, MKV, MP4, OGG, WMV, and XviD. For unsupported files, GOM includes a handy routine to help you locate the supporting codec online. In case you ever struggle with incomplete or broken AVI files, GOM will tweak the files index to allow for immediate playback. We love getting screen capture and burst screen captures (up to 999 frames) at no cost, and having a Time Jump key for skipping commercials in recordings rocks.

JW Player 5.7

Longtail Video

www.longtailvideo.com | Free



Not every video player belongs on your desktop. If you're an amateur Web developer, odds are you're going to want a player for your pages. Options abound, but JW Player is one of the most convenient and accessible tools for making your FLV, H.264, MP3, Silverlight, and YouTube files available to the world, letting you handle Flash and HTML5 concurrently. JW Player isn't for first-timers, but it does have a wizard routine to help you with player embedding. JW Player is fully open to tweaks, plug-ins, skins, analytics, and more. You can also tune how and when advertising elements appear. The player is free for non-commercial use, but the Pro version starts at \$89.

MediaMonkey 3

Ventis Media

www.mediamonkey.com | Free

Feeling a lot like Winamp on steroids, MediaMonkey 3 targets serious media collectors—people who need to manage thousands of files at a time. (In fact, you



can use MediaMonkey to manage your collection while tying it to Winamp as the file player.) Note that the free MM3's LAME MP3 encoder expires after 30 days, so you'll need to download a replacement. But if you want batch ID3 tag editing, automatic tag repair, tag preservation across transcoding, automatic playlist generation, and more, all within a packed UI that's open to community plug-ins, MediaMonkey 3 is bananas.

MPlayer

The MPlayer Team

www.mplayerhq.hu | Free



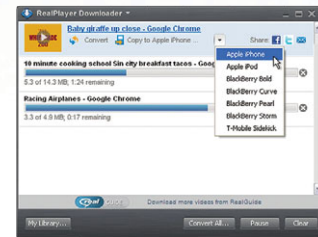
With roots spanning back to 2000, MPlayer is one of the top audio/video playback options for people unafraid to compile the app from its source code and encounter a command prompt rather than a GUI by default. Community-supported platforms include Amiga, Debian, FreeBSD, Mac OS X, TomTom GPS, Ubuntu, and many more. Oh, and Windows. Packages even include drivers for 3dfx and Matrox.

Video support ranges from RealVideo 1.0 and Intel Indeo to MPEG-4 AVC. Audio is equally extensive, including all of the MPEG formats, OGG, and FLAC. If you're willing to cobble together various libraries in Linux, MPlayer is probably the most satisfying DIY player available.

RealPlayer

RealNetworks

www.real.com | Free

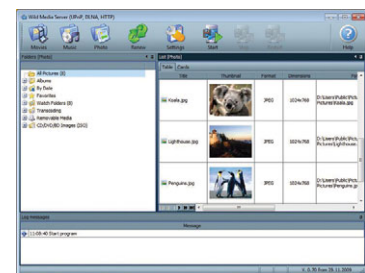


Remember wondering whether Real or WMA would dominate digital audio? Well, Real is still with us, and the latest free RealPlayer has some interesting tricks. Yes, it handles all of the expected file formats. Yes, it can sync your music and videos to over 100 devices, but the real juice here is in the integrated ability to download videos from hundreds of sites, including YouTube, with the click of a button that appears over the video frame. If you gave up on RealPlayer years ago, it's time to take a fresh look.

Wild Media Server

www.wildmediaserver.com | \$40

In the first quarter of 2011 alone, the DLNA certified over 1,000 TV models, never mind phones, set-top boxes, PCs, and other devices. You need a DLNA server to stream your audio, video, and photo content



to all of those clients, and Wild Media Server provides an avalanche of options for transcoding and optimizing source files for your target devices, right down to aspect ratio and subtitles. Wild Media will also push Internet-based radio and TV to your clients. The \$40 server software only covers one client, and additional clients are \$25 each.) Still, we love this software's power. ■

BY WILLIAM VAN WINKLE

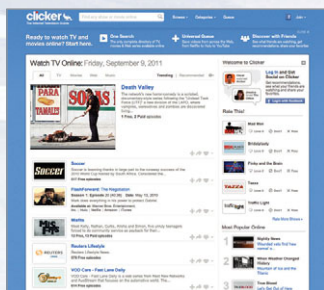
INTERNET, COMMUNICATIONS & SOCIAL APPS

Take Control Of Your World (Wide Web)

Clicker

Clicker Media

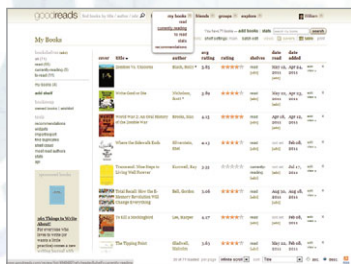
www.clicker.com | Free



Clicker isn't the first service to try to gather Internet TV and movies under one umbrella, but it may be the best. The free site claims to be the only complete online directory of television, movies, and Web series. True or not, a database that includes 40,000 movies, 90,000 music videos, and more than 1,000,000 episodes from over 12,000 TV shows is inspiring. Our favorite feature is Clicker's Universal Queue, which lets you save Web movies and shows. It can also track your Netflix and Hulu queues and YouTube favorites, all from a single hub.

Goodreads

www.goodreads.com | Free



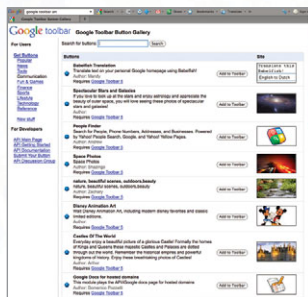
Bibliophiles unite! Imagine an infinite library that lets you gaze endlessly at the reading shelves of other bookworms. Divide your

collection into "read," "currently-reading," and "to-read" virtual shelves. Add the ability to form a book club with like-minded literati, then post your own book reviews of any title on your shelves. Gather friends to see what your clique is reading. In a nutshell, that's Goodreads. This free site lets you easily sort and group books by author, title, date read, or any custom category you can think of. Once you've listed your titles, you can quickly access data such as ISBN, literary awards, print editions, and other reader ratings. It's a great way to track your reading history and interests.

Google Toolbar

Google

www.google.com/toolbar | Free



Google Toolbar is like Google with a little something extra under the hood. The free browser plug-in features an integrated Google search window for instant access from anywhere on the Web. It also has a handy customization feature that lets you sort and hide tools, plus real-time search suggestions that include a built-in spell checker. Useful as those sound, our favorite features add even more flexibility to the browsing experience. Bookmarks saved to your Google account are accessible from any computer using the Toolbar's synchronized

Bookmarks menu. Also, Google Toolbar's ability to translate entire sites into more than 40 languages is outstanding.

Google Plus

Google

plus.google.com | Free



The most talked-about feature of Google's recent effort to improve the social media service model is Circles, which lets users group people into categories such as "Work," "Friends," or "Family." You can check updates in one specific Circle rather than sift through one giant feed. Similarly, your posts will go only to the Circles you designate. (Draw the necessary conclusions.) The "+1" button (equivalent to Facebook's "Like") lets you find others who have also +1'ed the same item. Hangouts provides a place for groups of friends to video chat on one screen. Sparks is a Google-fueled news aggregation service that lets you pin topics to your main page for instant access. Overall, Plus is a marginally better social service than Facebook, but time will tell if Google can slow Facebook's momentum.

LiveProfile

www.liveprofile.com | Free



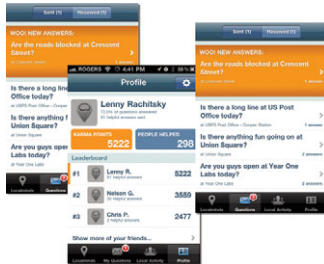
LiveProfile looks to stand apart in the messaging app world. With its eye-popping user interface, super-fast data transfer rates, and compatibility with Android, iPhone and BlackBerry, this free tool could become

huge. Texting is free, even internationally, and LiveProfile includes smart features such as receipt/read confirmation and the ability to see when the recipient is typing.

The “Profile” part of LiveProfile denotes the service’s social capabilities. LiveProfile integrates with Facebook and Twitter, letting you share status updates, upload photos and videos to share, and even change display name and profile details on the run. You access the whole package via a unique PIN, discouraging imposters.

Localmind

www.localmind.com | Free



Localmind asks, “What if you could send questions and get near-instantaneous answers about what’s happening at places you care about anywhere in the world in real time?” This free app for Windows, Mac OS, iPhone, and Android uses location programs such as foursquare, Gowalla, and Facebook Places to find out everything from the size of the crowd at the local watering hole to traffic conditions along your commute.

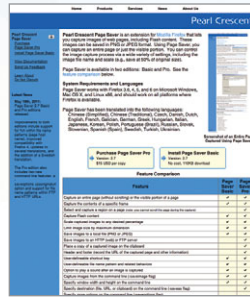
Users boost their reputations by earning karma points based on the number and relevance of their answers. Eventually, Localminders with enough karma points achieve higher ranks, maxing out at a Level 4 “Legend.” Answers that come too late are “swept under a rug,” a kind way of saying that your less-than-timely reply is no longer useful.

Page Saver

Pearl Crescent

pearlcrescent.com | Free (Basic)

Pearl Crescent Page Saver is one of those single-function tools that quickly become indispensable. Currently available as an extension for Firefox, Page Saver lets you capture images of long Web pages, including

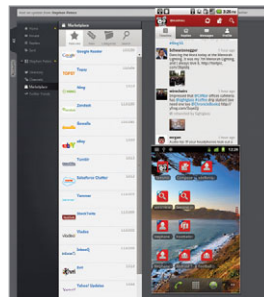


Flash content, and save them as a PNG or JPEG. The Basic version of Page Saver can capture an entire page or just the visible portion, has options to scale or limit image size, and lets you add a custom shortcut key for instant captures. The Pro version costs \$15 and includes the ability to save images directly to a Web or FTP server and place a copy of a captured image on the Clipboard.

Seismic Social

Seismic

seismic.com | Free

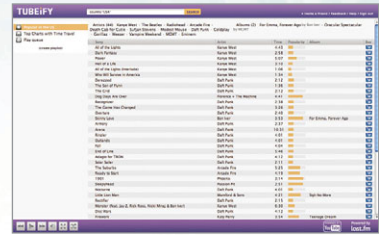


Seismic Social is a versatile, cross-platform tool that stuffs feeds from most of your social networks into one UI. Available for Android, iPhone, and Windows Phone 7, with a desktop counterpart for Windows and Mac OS, Seismic features over 90 third-party integrations such as LinkedIn, StockTwits, and Yammer. A Web-based version offers a fast, real-time dashboard and provides easy access to multiple Twitter, Facebook, and LinkedIn accounts. It also includes advanced scheduling features and is compatible with Firefox, Chrome, and IE.

Tubeify

www.tubeify.com | Free

Put Last.fm, YouTube, and Billboard in a blender, and the result is Tubeify, a tasty and client-less way to stream music. Arguably



the best feature of Tubeify is its ability to keep one track playing while you look for something else—a feat you can’t do on YouTube without opening multiple windows. Tubeify lets you search for songs, artists, and albums, but even partial searches yield decent results. With access to over a dozen current Billboard Charts, you can pretend to host your own American Top 40. You can also create, organize, and customize your own drag-and-drop playlists and share these lists with friends via email, Facebook, and Twitter. Today, Tubeify is still invitation-only.

Waze

www.waze.com | Free



One of the major pieces the digital revolution seems to be lacking is a good app for real-time traffic assistance. Even onboard navigation systems can’t predict when that impromptu flash mob is going to bottle things up at a major downtown intersection or when grandma’s 1966 Dodge Coronet is going to stall in the passing lane. Waze fills the gap by relying on its users’ willingness to provide real-time road conditions for an ongoing status report of routes to take or avoid. Its success in the United States will depend on its growing user base, but availability on all major smartphone platforms could help make waze into the most important development in traffic control since the stoplight. ■

BY WILLIAM VAN WINKLE

PERFORMANCE TWEAKERS & BENCHMARKS

Push Your Rig's Power Level To 9001

AnTuTu 2.2

www.antutu.com | Free



Smartphone/tablet benchmarks may not have caught up with their desktop cousins, but AnTuTu for Android earns its marks. AnTuTu runs a full suite of system tests, including memory performance, CPU integer performance, CPU floating point performance, graphics performance (2D and 3D), SD card reading and writing speed, and an optimized database I/O test. Version 2.2 introduces a fully redesigned UI and a new OpenGL-based 2D benchmark. And if you're looking for a little competition, a leaderboard shows performance scores and overall ranking.

AS SSD

Alex Intelligent Software
www.alex-is.de | Free



The German-born AS SSD includes eight tests for evaluating performance in solid-state

drives. Five "synthetic" tests measure read/write performance and access times. Using a 1GB test file size, AS-SSD clocks the time it takes to read and write the file. A throughput test using compressible data is included, as well. AS SSD also has three "practice" benchmarks that use test folders for large files, programs, and games. These folders are copied, and AS SSD uses the operating system's cache to determine how the SSD performs during simultaneous read/write operations. AS SSD works under Windows XP/Vista/7, and it fills a needed niche in storage benchmarking, where many apps are still tuned to HDDs.

Geekbench 2.1.11 (iPhone OS)

Primate Labs

www.primatelabs.ca/geekbench | \$0.99



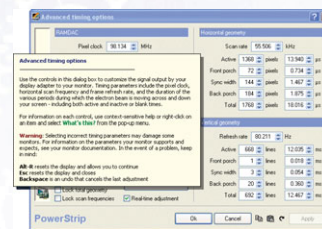
Forget about bells, whistles, and any other options in this iOS benchmarker (also available for Linux, Mac OS X, Solaris, and Windows). When you load Geekbench, it presents you with a System Information screen showing your phone model, processor, and amount of memory—sensible since these are the components being tested. Press the large Run Benchmark button, and the app starts crunching. The subsequent results page again reiterates your system info on the bottom but also offers

integer, floating point, memory, stream, and overall Geekbench scores. Scroll down, and you'll see these scores broken down into subtest results. Feel like sharing (or bragging)? Press the Submit button to send your results to the Geekbench community.

PowerStrip 3.9

EnTech Taiwan

www.entechtaiwan.com | \$29.95

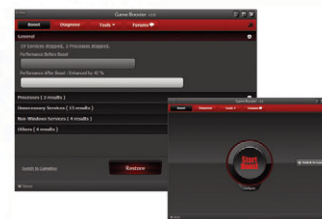


Entech PowerStrip 3.9 gives you hundreds of knobs to turn in the pursuit of total control over your display hardware. It supports many graphics cards under every Windows OS from Win95 to Win7. Its application profiler monitors when certain programs launch and then adjusts display settings, gamma, and clock speeds accordingly. Everything reverts to previous settings after the program closes. There's also a generous offering of system tools, including diagnostics, PCI-E and AGP device configuration, EDID (extended display identification data) decoding, and more. Although version 3.9 was designed with newer display cards in mind, PowerStrip also supports many older display adapters from the '90s.

Game Booster 3

IObit

www.iobit.com | Free



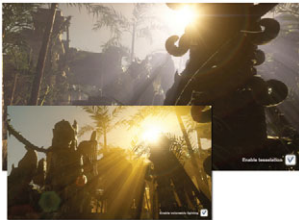
Any gamer knows that optimal play requires a computer that has a little something under the hood. Sadly, not every PC has the horsepower you might want. Game Booster 3 aims to make even older PCs roadworthy

by temporarily shuttering up to two dozen unnecessary background processes and services, as well as freeing as much RAM as possible. Game Booster 3 keeps every game's drivers up to date, as well as drivers for your video and audio adapters. You can specifically defrag game folders, and the ability to flip in and out of gaming mode is a real plus. With a straightforward UI and zero cost, it's hard not to love this app.

3DMark 11

Futuremark

www.3dmark.com | Free (Basic)



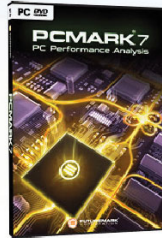
3DMark is often considered the gold standard when it comes to measuring PC graphics performance. In its latest incarnation, 3DMark 11 is optimized for testing DirectX 11 hardware. The benchmark includes six new tests, including four graphics tests, a physics test, and a combined test that spotlights DirectX 11 performance, including tessellation, compute shaders, and multithreading. Benchmark presets scale loads for all levels of hardware, though the uniquely derived scores are not comparable across the different presets. The free Basic edition gets the job done, but you'll have to pony up \$19.95 for an advanced, ad-free edition that includes benchmark looping, offline results management, and unlimited online results storage—a reasonable price compared to many other full-featured benchmarks.

PCMark 7

Futuremark

www.pcmark.com | Free (Basic)

With seven tests combining over two dozen individual system-oriented workloads, PCMark 7 is the obvious complement to 3DMark 11. The free Basic Edition offers unlimited benchmark runs of the standard PCMark suite and

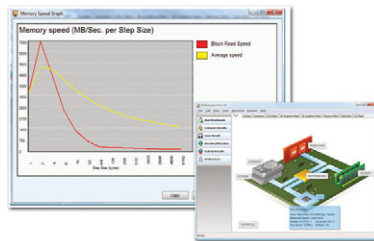


includes a free online account that lets you save results and compare them with other users. The \$39.95 Advanced Edition includes an additional half-dozen tests. The Productivity test measures efficiency in loading Web pages and office-type application usage, while Entertainment tests include workloads for all aspects of music and video, plus numerous gaming-related tasks. There's even a Lightweight test for entry-level portable computers.

Performance Test 7

PassMark Software

www.passmark.com | \$24



PassMark Performance Test 7 delivers a sweeping 28 tests across six component types, plus seven advanced testing windows intended for custom benchmarking. Standard tests include CPU, disk, memory, CD/DVD, and 2D and 3D graphics. The advanced suite adds additional tests for networking (Ethernet, Internet, and Wireless), multitasking, and visualized physics. You can also customize test runs to create your own benchmark scenarios. The program also includes easy-to-read disk speed graphs, customizable notes, and the ability to save benchmark results to disk as a new baseline. The benchmark can export results to HTML, text, GIF and BMP. If you need assistance, Performance Test 7 includes thorough online help. You can download a free 30-day trial if you want to kick the tires.

Sandra

SiSoftware

www.sisoftware.co.uk | Free (Lite)

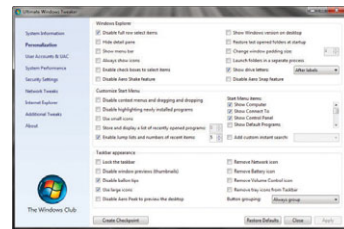


Sandra may be the fairest maiden in the benchmark arena, but it's also one tough sister. The tool has become a choice benchmark for overclockers since its introduction almost 15 years ago, and for good reasons. Information modules serve up detailed info on CMOS and BIOS settings, motherboard specs, CPU, chipset, ports, printers, memory, network, Windows internals, and more. Benchmarking modules stress, measure, and compare component performance for attributes from multicore CPU efficiency to OpenCL processing. Sandra is available in a free Lite version as well as multiple pro versions.

Ultimate Windows Tweaker 2.2

The Windows Club

www.thewindowsclub.com | Free



Ultimate Windows Tweaker 2.2 is a straightforward Windows optimizer for Vista and Win7, both 32-bit and 64-bit. It offers up a variety of tools, with a super-simple interface and options for system information, system performance, user accounts, security settings, and more. With features such as a button in each category to create a checkpoint in case you can't find your way back to a particular setting, UWT caters to newbies, which is a refreshing change if you're a greenhorn tired of hunting through forum posts for advice. ■

BY WILLIAM VAN WINKLE

A hand with a tattoo on the forearm holds a pair of black headphones. The background is a dark, metallic surface with a grid of circular speakers, each with a glowing blue center. The overall aesthetic is industrial and high-tech.

LISTEN UP

CPU'S HEADSET & SPEAKERS BUYER'S GUIDE

GAMERS PUT A BIG, HUGE EMPHASIS ON VISUALS.

Herky-jerky frame rates may as well sign your death warrant in competitive play, so you pick out a powerful GPU or three to ensure that your minimum fps never dips into "You're so dead" territory. Similarly, if you've ever been fragged in the first 15 seconds of action thanks to your "Come flank me" 4:3 display, you know why there's such a clamor for widescreen monitors and the increased field of view they afford.

We give the tactile realm plenty of attention, too. The best graphics card-LCD combination in the world won't do you a bit of good if your claw grip around a substandard mouse leaves you unable to spin on a dime and fire in rapid succession. A set of unresponsive WASD keys on an uncomfortable keyboard will have you eating a dirt sandwich just as quickly, so wallets open up and stacks of dollars are forked over for A1 input devices.

The combined result is that your PC's sound system is, too often, little more than an afterthought. Any old headset will do, you figure, so long as you can communicate with your teammates. That's a real shame, but not because a primo sound setup is as vital for survival as a cutting-edge graphics subsystem. As any HTPC enthusiast will tell you, neglecting the "A" in "A/V" means that you're shortchanging yourself on the total experience. So what if you don't *need* a top-notch 5.1-channel surround sound headset for Call of Duty? A middling set of cans is going to produce a muddy mess when it pulls double duty playing back Blu-ray audio, for example.

There are considerations beyond great sound, too. An exceptional headset capable of clearly producing discrete audio channels gives you the sort of positional cues (gunfire coming from the left, for example) that let you swoop in for a swift kill. And if you're in a tournament where money's on the table, don't you want every possible advantage?

So, this month, we give headsets and speakers their rightful due. For all the time we spend at our computers, don't we deserve a listening experience better than "good enough"? We think so.

What To Look For

Typically, both headsets and speakers will have a frequency response that ranges from 20 to 20,000Hz. This lines up nicely with the generally accepted spectrum of frequencies humans are able to perceive; it makes sense, since these companies aren't

making audio equipment for canine power users, after all. It follows, then, that any headset, headphones, or speakers with a 20Hz to 20kHz rated frequency response is theoretically capable of producing the lowest bass and highest treble we're able to hear.

Of course, it's never that simple. Just as important is amplitude of the speakers' response. Amplitude is essentially the variation between the source audio and the speakers' reproduction of that audio. This is often expressed as +/-XdB, where the closer "X" is to 0 the closer the speakers will sound to the original recorded audio. This, too, is little more than a guidepost, however, as two speakers rated at 20Hz to 20kHz +/-3dB can sound wildly different. This is definitely a case where you should trust your ears over the specs.

As manufacturers strive to produce headsets capable of pumping out the surround sound found in 5.1- and 7.1-channel speaker systems, we see an increasing number of headsets able to create "virtual" surround sound. Thankfully, the difference between virtual and discrete surround sound is much less murky. Headsets boasting "discrete" or "true" surround sound have individual drivers designated to produce a specific audio channel—front, rear, center—just like a set of speakers. "Virtual" surround sound headsets rely on some form of audio processing to effectively trick the ear into believing sound is coming from more sources than are actually present. Again, though, trust your ears. If one headset with virtual 5.1-channel audio sounds better than another headset with the real thing, who are we to judge?

Audio power has long been one of the key stats reported for speaker systems, but it's also arguably the most contentious. Theoretically, a speaker's rated power is the amount of electrical power the speaker can convert to sound before it distorts the audio and/or damages itself. Of course, some companies will report a speaker's peak power rather than its continuous power, the latter being a more valuable spec, so again, two systems with equal power ratings are more than likely *not* created equal.

For a class of products that are almost exclusively based on listening, we've given you a lot to look over. The following are our audio recommendations; give 'em a test drive if you can and make your buying decision accordingly. ■

BY VINCE COGLEY

BUYER'S GUIDE HEADSETS



Sony PC Gaming Headset (DR-GA500)

\$199.99
www.sony.com

Why we dig it: It's one thing to identify your headset as a gaming headset—that's the easy part. It's quite another thing to back up that claim, but that's exactly what Sony has done with this killer headset. This 7.1-channel headset truly puts surround sound on your noggin, and Sony also includes an external digital surround sound processor that's configurable for 2.1, 5.1, or 7.1 surround. But wait, there's more! The DR-GA500 has built-in FPS modes to let you set up the kind of precision audio necessary to rule the battlefield.

Who should apply: Hardcore gamers who want awesome surround sound and are willing to pay for it. The first-person shooter crowd should appreciate the DR-GA500's extra customization options.

Frequency response: 14Hz to 22kHz (headphones), 20Hz to 20kHz (mic)
Connector: Mini plugs, USB



Razer Megalodon

\$149.99
www.razerzone.com

Why we dig it: Leave it to Razer to conjure a vivid image with its product names: The Megalodon's namesake is a prehistoric shark that has starred in a handful of SyFy creature features and makes the Great White look like a guppy. Similarly, this predatory headset uses Razer's Maelstrom Audio Engine to produce 7.1-channel (or, alternatively, 5.1-channel) virtual surround, though the Megalodon makes for an equally imposing stereo headset. The headphones' 40mm neodymium magnet drivers are ferocious, and the Megalodon's control pod gives you quick access to a number of settings.

Who should apply: Big-time gamers and audio enthusiasts. Richard Dreyfuss may be interested, as well.

Frequency response: 20Hz to 20kHz (headphones), 50Hz to 16kHz (mic)
Connector: USB



Cooler Master Storm Sirius Gaming Headset

\$129.99
www.coolermaster-usa.com

Why we dig it: There's nothing virtual about this gaming unit from Cooler Master. The Sirius is rigged with discrete front, rear, and center channel drivers (30mm each) and a 40mm sub to blast you with all the positional audio you can handle. The Tactical Mixing Console really deserves its name: The control pod gives you precise control over the headset's drivers, a 10-band EQ, and a host of precision adjustments. Oh, and the headset just plain sounds great, whether you're mounting a Counter-Strike counterattack or kicking back to watch a Blu-ray.

Who should apply: Serious power users who want total control over their surround-sound setup.

Frequency response: 10Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: Mini plugs, USB

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PROCESSOR

BUYER'S GUIDE HEADSETS



SteelSeries Siberia V2 USB

\$109.99
steelseries.com

Why we dig it: With a 7.1-channel virtual surround card and retractable microphone, the Siberia v2 sounds just like it looks: suave. There's an in-line controller that has a mute button (handy when your clanmate carelessly strolls into an ambush and costs your team the match) and volume buttons (handy when you want to push the Siberia's monster 50mm drivers to their limit). That USB sound card also boasts a 12-channel equalizer, so you can fine-tune the Siberia's surround-sound effect with extreme precision.

Who should apply: Pro gamers searching for that extra something to give them the edge. Thanks to the Siberia's retractable mic, anyone who wants a great pair of headphones will be satisfied, too.

Frequency response: 18Hz to 28kHz (headphones), 50Hz to 16kHz (mic)
Connector: 3.5mm, USB



Tt eSPORTS SHOCK One

\$109.99
usa.ttesports.com

Why we dig it: The SHOCK One is the alpha headset of Tt eSPORTS' pack. Packing dynamic 40mm drivers for forceful audio, the SHOCK One is DTS-certified and capable of producing 5.1-channel virtual surround sound. Sure, there's a great noise-cancelling mic attached to these slick cans, but what really wins the day for us is the Tt eSPORTS' exceptional bundled software, which includes tons of customization options, presets, and DTS tweaks.

Who should apply: Competitive gamers who need a no-nonsense headset for multiplayer action and quality headphones to use to relax with a good movie after the match.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: USB



Corsair Vengeance 1500

\$99.99
www.corsair.com

Why we dig it: Amazing 7.1-channel surround for under \$100? Yes, please. You're putting a lot of power and comfort around your ears with this headset, thanks to the Vengeance 1500's 50mm drivers and microfiber memory foam earpads, respectively. The headset's high-sensitivity noise-cancelling microphone stomps out the cacophony around you, meaning your roommate/mom/professor can carry on in the background without interfering with your orders to the rest of your team. Whether it's 7.1-channel or 5.1-channel sound you crave, the Vengeance 1500 delivers in spades.

Who should apply: Hardcore and professional gamers and music and movie aficionados who want immersive 7.1/5.1 Dolby multichannel audio.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: USB

BUYER'S GUIDE HEADSETS



Logitech Wireless Headset H800

\$99
www.logitech.com

Why we dig it: Flexibility and accessibility rule the day with this headset. You have the option of connecting via the headset's USB wireless nano receiver or using its built-in Bluetooth to connect to compatible smartphones. On-ear controls let you quickly take a call, skip a track, and pump up the volume. Did we mention the laser-tuned drivers, built-in equalizer, and noise-cancelling microphone? Yeah, those are included, too.

Who should apply: Multitaskers who need a multipurpose headset. Games, music, calls—the H800 handles all of these with ease. Anyone who loves good sound but hates being tethered to a USB port should consider this headset.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 6.5kHz (mic)
Connector: USB (wireless, 2.4GHz), Bluetooth



Corsair Vengeance 1300

\$79.99
www.corsair.com

Why we dig it: This headset has its game face on. Check it: The Vengeance 1300 gives you all the thump and bump of 50mm audio drivers, the same size as the Vengeance 1500's drivers, which makes for full, clear audio when you're mowing down the Ork horde in Warhammer 40K: Space Marine or chopping your way through a crowd of Dead Island's zombies. We think these are great for multiplayer sorties, as well, thanks again to the high-sensitivity noise-cancelling mic that Corsair has endowed the Vengeance 1300 with.

Who should apply: Serious gamers ready to plug into a 3.5mm analog audio connection and go to town.

Frequency response: 20Hz to 20kHz (headphones)
Connector: 3.5mm analog



Tt eSPORTS SHOCK

\$79.99
usa.ttesports.com

Why we dig it: Quite frankly, this has to be one of our favorite surround-sound headsets. As a subsidiary of Thermaltake, Tt eSPORTS has created an entire family of high-quality gaming-oriented gear, and the SHOCK is a shining example. With an extremely adjustable headband, the SHOCK will fit comfortably on domes from David to Goliath. The headset also folds up for quick storage when you need to beat a hasty retreat after humiliating the competition. A noise-cancelling microphone and punchy 40mm speaker drivers round out this impressive specimen.

Who should apply: Enthusiasts who need bold sound in a bold look that makes a bold statement.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: 3.5mm

BUYER'S GUIDE HEADSETS



Razer Carcharias

\$79.99
www.razerzone.com

Why we dig it: The Carcharias swims in the Megalodon's wake, but in Razer's shark tank of gaming headsets, this is no slight. It has 40mm neodymium magnet drivers, just like the Megalodon, and its noise-filtering microphone won't fill your squad's ears with a bunch of garbled gobbledygook when you issue crucial marching orders. Whether it's hearing or being heard, the Carcharias' crystal-clear sound is further proof of Razer's commitment to making hardware that gamers crave.

Who should apply: Gamers might be first in line for this headset, but all power users should give the Carcharias a serious look-and-listen.

Frequency response: 20Hz to 20kHz (headphones), 50Hz to 16kHz (mic)
Connector: 3.5mm



Tt eSPORTS SHOCK Spin

\$74.99
usa.ttesports.com

Why we dig it: Tt eSPORTS engineers must've had George Clinton flowing through their iPods, because the SHOCK Spin meets his demands: This headset supplies ample amounts of funk. Available in Diamond Black, Shining White, or Royal Red, the SHOCK Spin's earcups' outer shell has a striking design reminiscent of parent company Thermaltake's case fans. More than a pretty face, though, the SHOCK Spin boasts 50mm neodymium magnet speakers to rattle your head while you're rattling your opponents' cages.

Who should apply: Power users who want their headset to look as good as it sounds. The headset's lavalier microphone is perfect for gamers who don't want a boom in their face.

Frequency response: 15Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: 3.5mm



Logitech Wireless Headset H600

\$69.99
www.logitech.com

Why we dig it: The Wireless Headset H600 is full of little touches that make it an enticing value proposition. A combination of laser-tuned drivers and a noise-cancelling mic produce clean, clear audio regardless of whether it's coming or going, so to speak. The headset's rechargeable battery has enough gas in the tank to last 6 hours before it needs to be recharged, giving you plenty of wireless freedom for an extended gaming session.

Who should apply: People who need a reliable wireless headset that won't break the bank. Laptop users will like that the wireless adapter for the H600 practically disappears into a USB port, meaning you won't need to unplug it every time you have to stash your laptop.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 6.5kHz (mic)
Connector: USB (wireless, 2.4GHz)

BUYER'S GUIDE HEADSETS



Logitech Wireless Headset For iPad

\$69.99
www.logitech.com

Why we dig it: The screen on the iPad 2—gorgeous. The built-in speakers? Uh, yeah, about those . . . You don't spend 500 bucks on a tablet and then subject yourself to sub-standard audio, do you? Well, we don't, which is why we consider this Logitech set essential to complete "the iPad experience." The headset folds up, too, so we can keep our tablet footprint as small as possible. The 6-hour rated battery life is good for a few movies, a ton of tracks, or one FaceTime conversation with your Aunt Nancy.

Who should apply: Anyone who spends any appreciable time with FaceTime will find these indispensable. These are also a must-have for listening to your iPad in public.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 6.5kHz (mic)
Connector: Bluetooth



Asus HS-1000W

\$59.99
www.asus.com

Why we dig it: Asus fully supports our itinerant inclinations with the HS-1000W, a wireless headset that doesn't drop the beat when you wander across the room. With a recommended range of 50 to 80 feet, you'd have to have an awfully sprawling nerd cave to take this headset out of range. Power and volume buttons are included on one of the earcups for easy access, and the HS-1000W's lithium-polymer battery holds a charge for up to 8 hours, which will let you game, game, and game some more.

Who should apply: Anyone who loathes wires and wimpy battery life.

Frequency response: 20Hz to 20kHz (headphones)
Connector: USB (wireless, 2.4GHz)



Asus CineVibe

\$59.99
www.asus.com

Why we dig it: The CineVibe is one headset in our batch that takes head-shaking bass to its literal extreme. Equipped with "rumble feedback" headphones, the CineVibe takes a page from the videogame controller biz and lets you strap force feedback to your head. (The in-line control unit lets you adjust this feature, by the way, in case you find yourself downing ibuprofen like Tic Tacs.) The 30mm drivers are superb for whatever task—gaming, music, movies, Skype—you assign them, and the CineVibe's plug & play design makes them ready to go right out of the box.

Who should apply: Gamers who can't get enough haptic feedback. Enthusiasts who want a comfortable and reliable headset.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: USB

BUYER'S GUIDE HEADSETS



Sony PC Gaming Headphones (DR-GA100)

\$59.95
www.sony.com

Why we dig it: The sharp-looking DR-GA100 is yet another example of how Sony developed its long-standing reputation for making polished hardware. The inline control unit is easy to use, and the soft, cushioned earpads are exactly what the ENT order for a marathon fragfest. The 30mm drivers produce some seriously heavy sound, which makes the DR-GA100 as good for music and movies as it is for gaming and VoIP.

Who should apply: Enthusiasts who need a solid 'set that looks as good as it sounds. This headset is also available with violet earpads (model DR-GA100/VLT), in case your style demands deviation from the standard black.

Frequency response: 14Hz to 22kHz (headphones), 20Hz to 10kHz (mic)
Connector: Mini plugs



Cyber Acoustics AC-850

\$44.99
www.cyberacoustics.com

Why we dig it: This is a jack-of-all-trades headset that does a little bit of everything. The 30mm dynamic drivers give you a nice kick for gaming or listening to movies, but the headset's modest size means that you don't have to feel like you're putting on a football helmet if all you want to do is get your Skype on. The adjustable, noise-cancelling microphone swivels 180 degrees. Leatherette ear pads keep the AC-850 comfortable for hours on end.

Who should apply: Gamers who need a multipurpose headset that gets the job done, no matter what that job happens to be. Music fans who need their headphones to do more than music will like the AC-850, too.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 16kHz (mic)
Connector: USB



Tt eSPORTS ISURUS

\$39.99
usa.ttesports.com

Why we dig it: Think earbuds on steroids. When we need big audio in a form factor that will fit in our back pocket, Tt eSPORTS' ISURUS is our "headset" of choice. We marveled at the power stuffed into the ISURUS' 13.5mm drivers, and Tt eSPORTS packages the ISURUS with three sizes of ear sleeves for, well, three sizes of ears. The in-line microphone is there when you need to game, and the ISURUS is naturally compatible with digital media players when you need to rock. The buds stow in a stylish pouch when you need to take a break.

Who should apply: Gamers who keep their iPods at the ready but don't want to switch between two sets of headphones.

Frequency response: 20Hz to 20kHz (headphones), 100Hz to 10kHz (mic)
Connector: 3.5mm

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www.cyberpowerpc.com



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\$575

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BUYER'S GUIDE HEADSETS



Corsair Vengeance 1100

\$39.99
www.corsair.com

Why we dig it: The Vengeance 1100 is the type of does-it-all headset that we'd be just as happy to use ourselves as we would to give it as a gift. The tuned 40mm drivers are plenty respectable, and the headset's noise-canceling cardioid mic has a flexible boom, so we can position it exactly where we want it. You get USB and analog connectors with this package, and the Vengeance 1100 is compatible with both PCs and Macs, so it really is ideal for virtually any scenario. Multimedia, video calling, games—this headset has it all covered.

Who should apply: People who enjoy great-quality audio for gaming, music playback, and movies.

Frequency response: 20Hz to 20kHz (headphones), 200Hz to 10kHz (mic)
Connector: USB, 3.5mm analog



Rosewill RHM-6308

\$39.99
rosewill.com

Why we dig it: Rosewill's RHM-6308 is all the evidence we need that you can get a respectable surround-sound headset without raising your personal debt ceiling to the stratosphere. Capable of producing 7.1-channel virtual surround sound, the RHM-6308 let you pick up subtle audio cues from every which way, greatly reducing the chance you'll get jacked in the back in Team Fortress. This head oozes adjustability, too, with a flexible boom and adjustable headband.

Who should apply: Bang-for-the-buck min-maxers who want to dominate behind the keyboard and at the cash register.

Frequency response: 10Hz to 25kHz (headphones), 70Hz to 20kHz (mic)
Connector: USB



Rosewill RHM-556U

\$19.99
rosewill.com

Why we dig it: Oh, those sneaky folks at Rosewill. Here's a headset masquerading as a pair of headphones, but there's a surprise inside, literally: The RHM-556U's omnidirectional microphone is integrated into the headset housing, so when you don't need it, it's about as close to not being there as you can get. The headset folds up when the firefight dies down, and Rosewill includes a pouch with the RHM-556U for convenient storage. The headset's 40mm special Mylar cone drivers deliver good sound in a headset that'll cost you less than a Jackson.

Who should apply: Enthusiasts who want a respectable headset at an unbeatable price.

Frequency response: 10Hz to 25kHz (headphones), 70Hz to 20kHz (mic)
Connector: USB

BUYER'S GUIDE

SPEAKERS



Logitech Z906

\$399.99
www.logitech.com

Why we dig it: Honestly, what's not to dig? Bringing 500 watts of power split among a big ol' side-firing subwoofer (165W) and five satellites (67W each, and wall-mountable, too), the massive sound these speakers produce will have your neighbors skipping over the police to phone the National Guard. THX certification, Dolby 5.1, DTS—yeah, they're all here, too. The included control pod makes for an extremely capable command center, and the Z906's gaggle of inputs lets you funnel its thunder to more than just your PC.

Who should apply: Enthusiasts who frequently pay for components with blank checks. Gamers who want huge surround sound and have the accommodations to make it happen.

Total power: 500W (measured via FTC RMS method)
Connector: 3.5mm, RCA, digital optical, digital coaxial



Corsair Gaming Audio Series SP2500

\$249.99
www.corsair.com

Why we dig it: Oh, baby. We thought we knew the audio quality that 2.1-channel PC speakers were capable of producing, and then we opened our ears to the SP2500. (See page 41 in the June 2011 issue.) Corsair has packed so much awesome into this set that you owe it to yourself to read the full review, but here's an appetizer: One 8-inch 120W sub tucked in a fourth-order closed bandpass enclosure and powered by bridged dual 60W class-D amps with integrated DPS. Two satellites packing 3-inch 40W midrange drivers and 1-inch, 16W ferrofluid-cooled silk diaphragm tweeters. An awesome control pod. Trust us: It sounds as good as it sounds.

Who should apply: Music and movie maniacs who want amazing audio. Serious gamers in search of serious audio should search no further.

Total power: 232W (measured via FTC RMS method)
Connector: 3.5mm



M-Audio AV 40

\$229.99
www.m-audio.com

Why we dig it: With speakers like these, it's easy to forget that there's no separate sub. And with the 4-inch, polypropylene-coated drivers in these bad boys, M-Audio's AV 40 speakers will rock you so hard that you won't need more bass. To hit the high notes, these speakers rely on 1-inch ferrofluid-cooled silk cone tweeters. With RCA, 1/4-inch TRS, and 1/8-inch aux in connectors, the AV 40s will fit right into virtually any A/V scenario you can imagine. They're magnetically shielded, too, so they'll play nice sitting next to your giant LCD.

Who should apply: Anyone suffering from multiple device disorder. Connect the AV 40 speakers to your PC, PS3, and everything in between.

Total power: 30W
Connector: RCA, 1/4-inch TRS, 1/8-inch aux

BUYER'S GUIDE SPEAKERS



Sony PC Speakers (SRS-DB500)

\$199.99
www.sony.com

Why we dig it: Even though Sony has its hat in virtually every consumer electronics ring, it's easy to think that its audio lineup is limited to speakers that belong in a home theater. The 2.1-channel SRS-DB500 grabs you by the ears and shakes away such misconceptions, as this 300-watt monster system redefines "PC audio." Use the included remote to pump up the volume from a distance, but be sure to keep these thunderous speakers away from children, small pets, and the meek of heart.

Who should apply: Someone who spends more time at their PC than in front of their home-theater setup. Discriminating connoisseurs who want to extract maximum sound from their PCs should look no further.

Total power: 300W
Connector: Mini plug, RCA audio-in



Antec rockus 3D

\$199
www.antec.com

Why we dig it: Power supplies and cases are Antec's forte, so maybe you haven't heard the company recently added a killer 2.1-channel speaker set to its stable of dynamite products. The "3D" in "rockus 3D" refers to Antec's 3Dsst technology, which, according to Antec, "actively analyzes incoming stereo audio signals and intelligently places them into a 3D sound field." This translates to a scary-realistic surround-sound experience with ridiculous highs, lows, and mids. The rockus 3D's subwoofer uses a passive radiator to produce maximum bass in minimum space. The anodized aluminum satellites complete the look.

Who should apply: Power users interested in a set of speakers with breathtaking acoustics and aesthetics. Enthusiasts who crave immersive audio in a 2.1-channel setup.

Total power: 150W
Connector: 3.5mm, RCA, optical (TOSLINK)



Corsair Gaming Audio Series SP2200

\$99.99
www.corsair.com

Why we dig it: Leave it to Corsair to make a showing in almost every PC component category. With the exception of the CPU, motherboard, and graphics card, you can now build a killer system that's nearly 100% Corsair from top to bottom, and this 2.1-channel setup is yet another great example. Each satellite has 5cm drivers and pumps out 8W of power, while a thunderstorm of bass rolls into town, courtesy of a 30W, 6-inch, side-firing, ported subwoofer. We also need to point out that Corsair measures its speakers via the FTC RMS method, rather than reporting peak or maximum power specs.

Who should apply: Core gamers and music/movie buffs who want immersive booming sound from a 2.1 speaker system.

Total power: 46W (measured via FTC RMS method)
Connector: 3.5mm, RCA

BUYER'S GUIDE SPEAKERS



Logisys 2.1+1 Multimedia Clear Speaker w/Blue LEDs

\$79.99

www.logisyscomputer.com

Why we dig it: Logisys has made a well-deserved name for itself as a peddler of hardware that lets you light up your system, and this 2.1-channel setup is no exception. The speakers' clear shells and sound-activated blue LEDs combine to produce an awesome glow that truly puts the finishing touches on any mod with extensive lighting. That "+1" refers to the speaker system's independent amp, which sports volume, bass, and treble knobs. Each satellite boasts 12W of power, and that eye-catching sub brings another 16W.

Who should apply: Mad scientists. Alternatively, any modder whose system has more light sticks than a rave.

Total power: 40W (measured via FTC RMS method)
Connector: 3.5mm, RCA



Logisys Amadeus 4.1 Home Theater Surround Speaker System

\$69.99

www.logisyscomputer.com

Why we dig it: Two front and two rear speakers (each 16W RMS) combine with a 35W RMS subwoofer to form an impressive surround-sound team. At \$69.99, the Amadeus is virtually unmatched as a spectacular value buy, so you don't have to sacrifice quality audio if you need to devote more of your system budget elsewhere. Logisys dressed the imposing sub in a wood cabinet, which makes the Amadeus look even more legit.

Who should apply: Power users on a budget who nonetheless want to saddle up with a great surround-sound speaker system.

Total power: 99W (measured via FTC RMS method)
Connector: RCA (RCA-to-3.5mm cable included)



Razer Ferox

\$59.99

www.razerzone.com

Why we dig it: Sort of like Tt eSPORTS ISURUS earbuds, Razer's Ferox is all about making a lot of noise in a little space. These pint-sized powerhouses stow away in an included pouch ready to be drawn and fired any time you're on the go and need a solid pair of speakers. And don't for one second sneer at the 6W total power rating, because the Ferox speakers measure a mere 2.5 x 2.75 x 2.75 inches (HxWxD), making this set your laptop speakers' worst nightmare.

Who should apply: Nomadic power users who spend the bulk of their gaming time on a laptop and desperately need better sound than their portable's integrated speakers.

Total power: 6W
Connector: 3.5mm, USB

BUYER'S GUIDE SPEAKERS



Sony Desktop Speaker System (SRS-D4)

\$59.99
www.sony.com

Why we dig it: These two satellites brought along a 13-watt subwoofer and would like to play. In fact, we like to call the SRS-D4 a “family-friendly” 2.1-channel speaker system—friendly in the sense that they make great sound without being so loud that your wife and kids three rooms down can’t hear themselves think. That said, there’s impressive power lying within this package. The SRS-D4 will make a good complement to any system, from gaming rigs to HTPCs.

Who should apply: If city noise ordinances keep you from unleashing the full force of Sony’s SRS-DB500, then this little brother should be just the ticket.

Total power: 27W
Connector: Mini plug



Cyber Acoustics CA-3602

\$54.99
www.cyberacoustics.com

Why we dig it: This is a 2.1-channel speaker system that means business. The acoustically balanced, ported sub has the bass situation handled, with a 5.25-inch Power Pro Series driver kicking out 18 watts of rumble. And the magnetically shielded satellite speakers are not slouches, either, as they boast 6 watts per channel at 4 ohms. The CA-3602 system also has a sweet touch-sensitive control pod that lets you adjust the volume with a simple finger swipe. Aux-in and headphone jacks make the control pod more than just a fancy volume knob.

Who should apply: People who want big-time sound without a big-time price. Movie buffs and gamers who don’t have room to outfit their rigs with a 5.1-channel setup will find that the CA-3602 push the boundaries of 2.1-channel surround sound about as far as they will go.

Total power: 62W
Connector: 3.5mm



Cyber Acoustics CA-896

\$49.99
www.cyberacoustics.com

Why we dig it: These unassuming 2.0 speakers have a secret. There’s a USB charging port tucked away behind one of the speakers; it’s exceedingly convenient to plug in your iDevice (or other portable that recharges via USB) and refuel, so to speak, without searching for a free port on your system or an open wall socket. A pair of 2-inch, high-efficiency, 4-ohm drivers generate substantial sound, and it’s hard to argue against a good pair of speakers for under 50 bucks.

Who should apply: Portable device owners who want a quick and easy way to recharge their gear that’s literally within an arm’s reach.

Total power: 10W
Connector: 3.5mm

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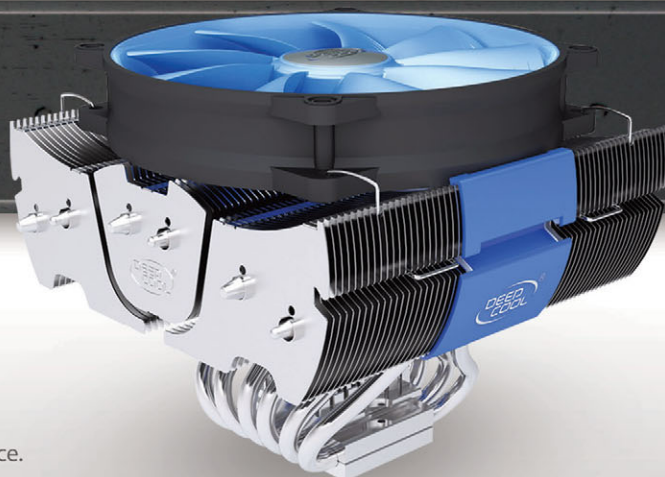
CPU Cooler

SHARK FIEND

This fiend is uniquely designed to achieve greater efficiency in both CPU and system cooling.

FEATURES

- Equipped with multiple clips to support Intel LGA1366/1155/1156/775 and AMD AM3/AM2+/AM2.
- 6 sintered powder heatpipes conduct heat from the processor quickly to protect it from overheating.
- Nickel plated copper base gives perfect contact with the CPU surface.
- Dense nickel plated aluminum fins with big surface dissipate heat efficiently.
- 150W solution, a perfect choice for overclockers.



Notebook Cooler

i-Stand S3

Multi-functional stand for iPad & Tablet PC.

FEATURES

- Multi-functional stand for iPad & Tablet PC.
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WWW.ELOGISYS.COM



BY



Inside The World Of Betas

FreeCommander XE 0.0.0.550

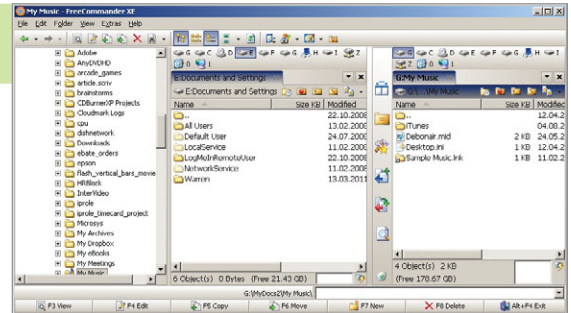
When we looked at Windows Explorer alternatives a few months ago, we noted that FreeCommander didn't really follow the traditional Norton Commander-style GUI despite having "commander" in its name, but we considered that a good thing since this type of GUI had sort of fallen out of favor these last few years. Well, FreeCommander XE is bringing it back.

So, like Norton Commander, FCXE has seven large buttons along the bottom edge of its window, labeled "F3 View," "F4 Edit," "F5 Copy," and so forth. It has two panes to show files and folders on two locations of your drive; to perform operations, you generally select files in one pane, select the destination directory in the other pane, and then press the Function key that corresponds with the desired action. For the mouse-less

era that existed in Norton Commander's heyday, this workflow made loads of sense, but we wonder about it today. Yes, you can use your mouse to click these buttons, too, but you can use that same mouse to just drag and drop or right-click files, more or less rendering those buttons useless.

FCXE offers a third "folder pane," which displays a folder tree that updates itself instantly and automatically based on what's selected in the normal folder panes, a lot like XYPloer or xplorer2. This makes more sense in the modern landscape of Windows 7.

FCXE comes up a bit short on features, with some commands grayed out,



FreeCommander XE 0.0.0.550

Publisher and URL: Marek Jasinski, www.freecommander.com

ETA: Q1 2012

Why You Should Care: The Commander returns, with a modern twist.

awaiting implementation, but that's what development betas are for. We found it stable and fast, so if you yearn for a free, modern Commander, FCXE is worth checking out. ■

BY WARREN ERNST

BatteryCare 0.9.8.11

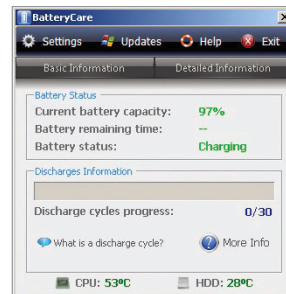
With portable PCs now outselling their desktop counterparts, it's no wonder that utilities aimed at improving the portable experience are cropping up everywhere. Of these, BatteryCare is particularly handy.

When running on battery power, Windows makes an attempt at displaying how much time is remaining before your fancy laptop becomes an inert, fancy paperweight. But this estimate can fluctuate wildly as your power drains away. BatteryCare uses its own observations and algorithms to calculate "time remaining" differently. Over the course of just a few sessions with your laptop untethered from a wall socket, BatteryCare reports your time remaining very accurately.

Of course, it isn't all Windows' fault. Over the course of dozens of charges and discharges, your modern lithium-ion polymer battery's internal sensor starts to become inaccurate, requiring a deep

discharge/recharge cycle to recalibrate itself. BatteryCare keeps track of your charging cycle history, reminding you when you've discharged and recharged your battery enough to warrant a deep discharge and recharge. Don't know how to perform this task? Never fear, BatteryCare tells you how.

You can also quickly see your battery's manufacturer; designed, total, and current capacity; discharge rate; voltage; and wear level, all of which help you gauge if your old battery is on its last legs and in need of replacement. To actually increase your battery life in Win7, BatteryCare can optionally disable power-hungry Windows features (such as Aero, for example) when you're running on your battery.



BatteryCare 0.9.8.11

Publisher and URL: Filipe

Lourenço, batterycafe.net

ETA: Q4 2011

Why You Should Care:

Your battery is what makes your laptop portable, and BatteryCare gives you extra details about it.

Not all of BatteryCare's handy features are fully baked. Clicking the Taskbar Tray icon lets you see more information, such as your CPU temperature, but the CPU temp on one of our systems was wildly off.

Given its low cost of nothing, as well as its small CPU and RAM footprint, we think most laptop owners should give it a spin. ■

BY WARREN ERNST

The Latest Upgrades To Keep You Humming Along

Some essential software clients receive incremental upgrades this month, including iTunes, CCleaner, and JRiver Media Center.

Software Updates

Angel's Vox 1.6

The software client for listening to audiobooks adds playback control integration with the Windows 7 taskbar. Links to product and vendors are now included in the Help menu. The player now has a bundled sample title of sorts—Abraham Lincoln's "Gettysburg Address." Multiple fixes are also included, regarding short audio clip playback, volume slider graphics, memory leaks, and mistaken error reports. Angel's Vox's audio effects library and AAC/MP4 also received updates.

www.superutils.com/products/angels-vox/

BitComet 1.29

A number of updates and bugfixes have been added to the interface. For example, the GUI now shows the download size/speed from VIP Acceleration in the task summary's tooltip, and the task list should now properly sort according to download/upload size. Several core enhancements, including support for Firefox 6 and a better connection request algorithm, should improve the overall BitComet experience.

www.bitcomet.com

CCleaner 3.10

The popular system cleaner and maintenance tool keeps up with the frantic pace of a ton of browser updates. This version supports Firefox 6 and Firefox 7 beta, as well as IE 9.0.2, Safari 5.1, and Opera 9. With this update, CCleaner can now clean the following: MS Search, cached fonts, RegEditX, SpeedBit Download Accelerator Plus, Spyware Terminator, SUPERAntiSpyware, Adobe Acrobat Distiller 10, and Foxit Reader 5.0. Version

3.10 also adds a number of assorted translations and minor optimization tweaks.

www.piriform.com/ccleaner

Firefox 6.0.2

Mozilla continues its relatively new rapid release schedule with the 6.0 launch of its browser coming only months after 5.0. This version promises faster rendering and a smarter Awesome Bar that highlights the current domain. Startup times when using Panorama should decrease, and version 6.0 resolves a host of stability and security issues.

www.mozilla.org/firefox/

iTunes 10.4.1

Mainly a bug-stomping release, this update corrects problems with some media keys on keyboards not working correctly. Also corrected is an issue that had the potential to make iTunes unresponsive when users attempt to buy an HD movie. Problems when adding artwork to albums and videos have been resolved, as well.

support.apple.com

JRiver Media Center 16.0.176

The venerable multimedia playback client and library has received a pile of recent updates, including many bugfixes and changes. Notably, JRiver should now have much better interactions with files marked "bad." Other recent changes include a thumbnail zooming fix (16.0.175), a DLNA fix (16.0.174), and a handful of changes to the ripping process (16.0.172).

www.jriver.com

Maxthon 3.1.8.1000

Maxthon has been providing consistent updates to its eponymous Web browser over the last few months. Version 3.1.8.1000 improves the browser's Webkit engine page compatibility and fixes several bugs,

including an unresponsive ALT-CTRL-ESC keyboard shortcut, a problem related to tabs locking up, language and stability issues with the Thunder Downloader Module, and a handful of UI problems. Maxthon's Smart Address Bar and Magic Fill features also receive fixes with this update.

www.maxthon.com

Parallels Desktop 7

For the Windows-to-Mac crossover user who wants to maintain the best of both OSes, Parallels Desktop 7 lets you switch more fluidly between the two on a Mac. This new version supports Mac OS X Lion and lets you use Windows programs from the Launchpad. Version 7 expands Parallels Desktop's virtualization capabilities, too, letting you use an iSight or FaceTime HD camera with Windows programs such as Windows Live Messenger.

www.parallels.com/mac

Xfire 1.138

The memory-resident in-game communications tool has temporarily disabled Twitter because of a change in the microblog's API. This update also fixes a problem trying to register using the client, as well as a crash bug that occurred when clicking an invalid link. Language support for non-ASCII characters has also been updated.

www.xfire.com

Driver Bay

Boot Camp 3.2 For Windows 64-bit

This update for Macs that allows dual-boot installation of Windows operating systems now supports AMD's Radeon HD 5870, Apple USB Ethernet Adapters, and MacBook Air SuperDrives.

support.apple.com

BY STEVE SMITH

An App-Happy Web

The Internet Takes A Lesson From Mobile Mania

The cuddly little icons that drive content and functionality on smartphones and tablets are starting to migrate to the desktop.

In the last year alone, we've seen Google open up its Chrome Web Store, where iPad providers such as *The New York Times*, Huffington Post, and Hulu actually bring some of the design concepts they crafted for their mobile apps to the Chrome Web browser. Apple, which has made the "app store" concept famous on iOS devices, launched a similar model on its Mac OS X platform and even used its own App Store as the primary distribution vehicle of the major Lion (10.7) update this summer. Mozilla has announced plans for an open app infrastructure, and Facebook has, of course, become home to some of the most popular online games.

The Web app concept is nothing new, naturally. Although definitions vary, "Web app" generally applies to applications that are accessed over the Internet, usually in a browser interface and often require some degree of connectivity. Google defines the term for its Chrome apps simply as "advanced interactive Web sites." Some of the early pioneers were Web mail providers, such as Microsoft Hotmail and Yahoo! Mail, which brought desktop-like email functionality to the browser. Services like these became more advanced in the mid-2000s with the emergence of AJAX-powered Web sites that allowed greater interactivity without page reloads. Likewise, Google, Microsoft, and smaller competitors have evolved their browser-based word processing and spreadsheet programs into much richer online versions of traditional offline office suites.

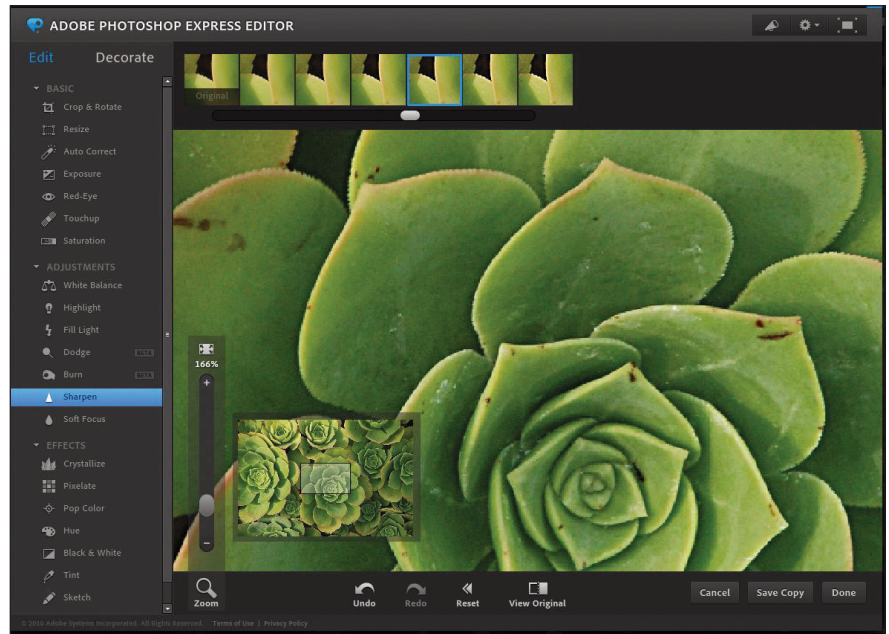
But with the rise of more advanced Flash services, and now HTML5, the line

between Web site and desktop application has blurred even more, as functions such as image and video editing, drag and drop, and unique user interfaces proliferate. Amazon.com's new Kindle Cloud Reader, for example, virtually takes over its host browser with its own look, feel, even letting you buy, download, and read books when offline. Photoshop Express (www.photoshop.com) puts a basic version of Adobe's well-known

for the major digital media players, cloud-based Web apps are quickly becoming a part of future business models.

Google's Long Reach

As we've detailed in recent issues of "Software Tips & Projects," Google's Docs browser apps have upped their game considerably, bringing piles of capabilities to the Web that were once only available in desktop suites.



Web-based applications such as Adobe's Photoshop Express have incorporated astonishing levels of interactivity into the browser, much of which rivals some desktop programs.

professional-grade image editor into a dedicated window with an impressive number of editing tools.

The tools for creating Web apps are so accessible that thousands of independently built Web apps are available and discoverable now from a range of sources. (See Sidebar.) In fact,

Google has been adding a host of new features, including mobile editing, easier discovery of spreadsheet functions, and better pagination. The Cloud Connect plug-in for Microsoft Office syncs offline edits made in the Microsoft desktop suite to a backed-up version accessible through Google Docs.

But it was the launch of the Chrome Web Store in late 2010 that arguably propelled Google to the forefront of companies bringing smartphone mechanics to desktop prominence. Since its December 2010 launch, the Chrome App Store has grown its catalog to several thousand apps. Almost 100,000 people have downloaded NPR's app, for example, which lets you create playlists from the network's programming day.

Many "apps" in the store are simply shortcuts to sites that already have interactivity, but many others, such as *Sports Illustrated's* Snapshot app have discrete functions and even business models specific to Chrome. Snapshot utilizes one of the inherent strengths of the Chrome Web Store, which is its connection to the Google In-App Payments back end. Publishers can sell content here with the same type of seamless in-app payments found in Apple's App Store, because Google ties Chrome app purchases into its existing Checkout system. For example, Sesame Workshop has a talk-along Bert and Ernie ebook for \$1.99. For many other apps, one click of the Buy button is all it takes to add or upgrade an app.

And, unlike the standard bookmarked Web apps, many Chrome apps add special features and conveniences. The installed apps are always available as icons when a Chrome user opens a new tab. Many of the apps can be started in a fullscreen mode (press F11) that replaces the familiar browser interface with the app's native interface. And by right-clicking an app, you can create Desktop shortcuts that you can pin directly onto the Windows Taskbar or Start menu. When you start an app from a shortcut, it opens in a streamlined window without Chrome tabs, buttons, etc.

Developing for and distributing within online app storefront like Chrome's can be lucrative for a developer, such as golf videogame maker WGT.com. The golf simulation is free to play but uses in-app microtransactions via Google Checkout

to let users upgrade their avatars and gear. The company turned its existing Web-based game into a Chrome App within a day and realized 50,000 new players in a few months. Better still, WGT found that those who access it via Chrome spend more money in the game's virtual pro shop than players who access the game via other means.



Mozilla is entering the Web app arena with proposals for an open app platform that allows Web-based programs to work across devices and operating systems.

Mozilla's Open Approach

One of the weaknesses of Chrome's Web apps is their uneven compatibility with other HTML5-capable browsers. Not every Chrome Web Store app is accessible from Firefox, for instance.

Although still in its earliest stages, Mozilla answered the Chrome App Store with its own Web Applications project (<https://apps.mozillalabs.com/>), which proposes a framework of apps that work across not only all HTML5-compliant browsers but also across devices. This spring, Mozilla introduced a new set of specs, APIs, and instructions to help developers build apps that will work on any HTML5 browser on any device or OS. The Mozilla vision of openness lets any developer or publisher create a custom store and distribute apps without having to submit it to Google's or Apple's centralized stores. Mozilla foresees users being able to move apps and synchronize content and settings from the desktop to mobile devices.

You can get a taste of the cross-platform usability of the Mozilla model by directing your mobile or tablet

browser to apps.mozillalabs.com/appdir, where you will see a set of demo apps that you can install to a Demonstration Dashboard. Mozilla has also issued an experimental Web Apps for Firefox extension that adds to Firefox a toolbar button that directly accesses and manages installed apps and lets you discover if

the Web site you are visiting has an app available. (Alas, the add-on doesn't work with the browser's most recent updates.)

Microsoft Uploads Its Office

After years watching Google develop its Web-based productivity apps, Microsoft finally got in the game last year with the introduction of Office Web Apps. Available at www.live.com, the browser-based versions of Word, PowerPoint, Excel, and OneNote work hand in hand with Microsoft's free SkyDrive cloud-based storage. Once you establish an account, you can upload Office docs made in the desktop version for editing and sharing online. However, Office Web Apps let you create documents directly online through an interface that mimics the traditional version's Ribbon. In Word, for instance, you can work with scores of typefaces, headings. The Excel Web App includes a large range of formatting options and calculations.

In a major refresh of Office Web Apps this spring, Microsoft added formula assistance, which adds a pop-up box of

function options and explanations that can be sorted in various ways. Microsoft also recently introduced collaborative co-authoring to the Word Web app, which gives multiple contributors to a document real-time views of who is adding what content. Also, PowerPoint now lets you change the theme of an existing presentation from within the Web app.

In Microsoft's case especially, having browser-based productivity apps lets Microsoft roll out new features and updates that all users can use immediately and without additional downloads, unlike the desktop versions of Office. Office Web Apps also enable interoperability with desktop Office users. Likewise in Office 2010, for example, using the Save

"evangelist" and head of product marketing, Raju Vegesna. "We saw that applications on the Web were going to be the future," he says.

Starting with an online word processor and then adding a CRM (customer relationship management) app in 2005, the company now boasts 27 apps, including Projects, Wiki, Calendar, Chat, and Discussions.

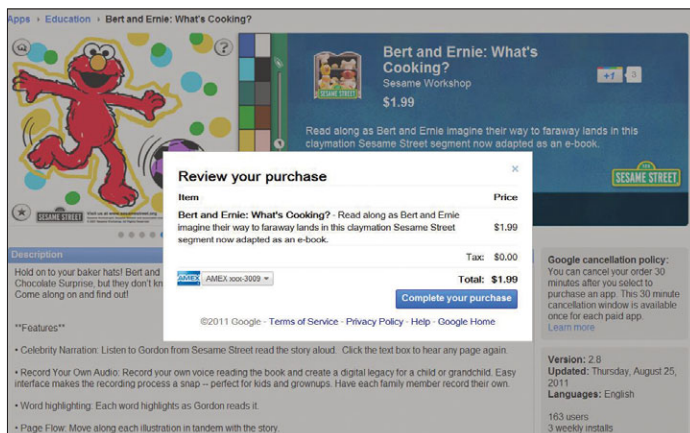
"We have 5 million registered users and about half a million monthly users," Vegesna says. Zoho's key strength is its coverage of many small businesses tasks (invoicing, CRM, etc.) via a single interface. Once a user is in Zoho Docs or Zoho Mail, for instance, a drop-down menu lets the user move easily

where updates and new functions can be distributed immediately to all users.

Vegesna says there are three keys to Zoho's future. "Keep growing the user interface," he says. "Business applications are known to be clumsy, and we try to change that. Second is mobile. We will launch mobile apps across the board." Finally, Vegesna says that the future of Web apps is integration. The next generation of Web apps will likely learn how to use a common set of shared services so that the apps can share content, contacts, payment information, and messages.

Just as smartphones eventually learned how to move the Web to a handheld format, now the Web is playing follow the leader and adopting the app store philosophy. ■

BY STEVE SMITH



The app model lets content providers such as Sesame Workshop package, distribute, and sell content on the Web in much the way they can on smartphones and tablets.

& Send command in the File menu offers the option to save to the Web, which accesses your SkyDrive. Internet Explorer 9 users can access SkyDrive and then drag and drop the URL into their Windows 7 Taskbar to make the cloud-based drive a one-click Taskbar icon.

The Other Office

Despite the increased presence of Microsoft and Google in the Web app arena, longstanding smaller developers have thrived by filling niches in the Web app ecosystem. Zoho (www.zoho.com) has been doing Web apps before Web apps were cool, with a suite of personal and small business productivity tools that launched in 2004, says company

across the full suite of apps. Aimed at small businesses that can't afford IT and don't want to manage multiple vendor relationships, Zoho brings it all under a single umbrella. Individuals can access most of Zoho's service for free, but businesses pay usage fees.

Vegesna says Zoho is actively working within the various Web app ecosystems that are shooting up. The company has iPhone implementations and is playing in other stores. "We have consumer-facing apps in the Chrome Web Store and business-facing apps that integrate with the Google Apps Marketplace," he says. The challenge and opportunity for Web app developers is to maintain the quality of their programs in an environment

The Other App Stores

Looking for Web apps? Apple's App Store and Google's Chrome Web Store aren't the only options in town.

AllMyApps (www.allmyapps.com): This handy online directory of both Web-based and downloadable apps has its own downloadable desktop version that indexes both your installed local and Web apps and helps you discover more.

OpenAppMkt (www.openappmkt.com): It isn't just about the downloadable Apple App Store and Android Market. Aim your Android or iOS device to this index to find and install Web-based apps for these mobile OSes.

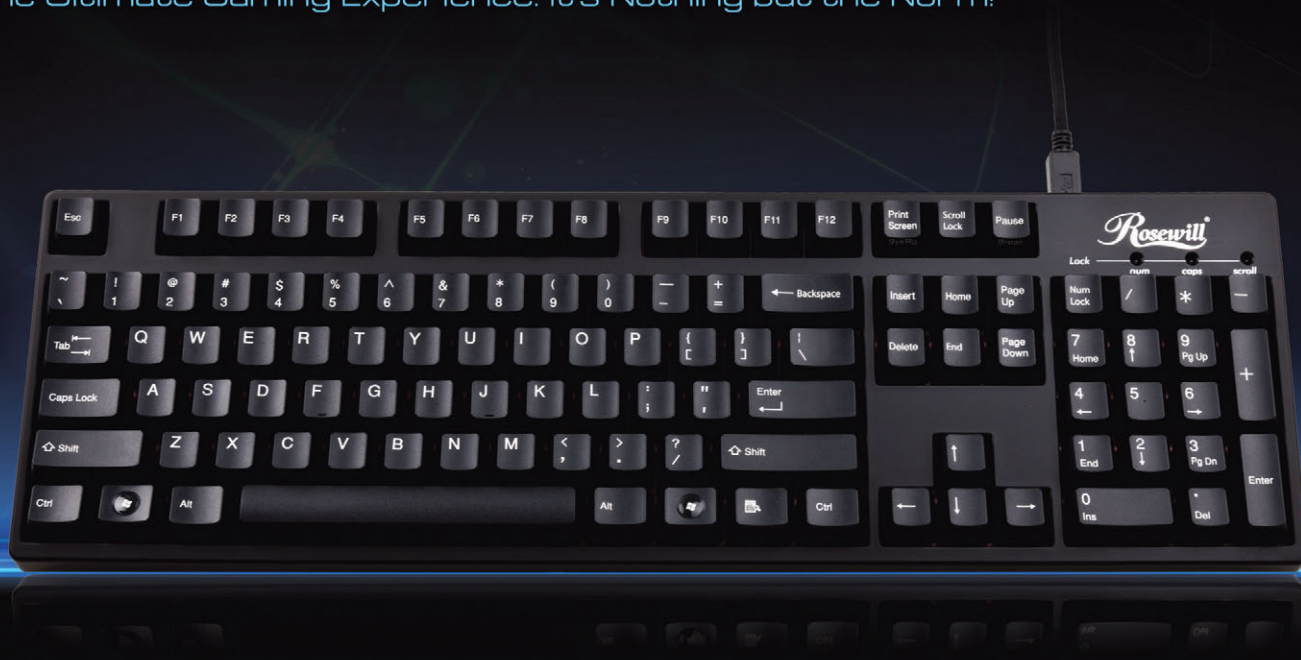
AppStorm (web.appstorm.net): Need a place to make sense of the Web app mania? AppStorm is a blog and reviews site focused on Web apps.

Feedmyapp (www.feedmyapp.com): Focused on Web 2.0 sites and apps, the site claims over 13,000 listings.

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FSL Launcher 1.1.4.4

If your desktop is anything like ours, it's probably crowded with enough icons to be a virtual fire hazard, and all of them change position every time you change display settings. Between wading through a sea of unrelated icons and navigating endless Start menu subfolders, it's a miracle sometimes that we can find anything.

Enter FSL Launcher, simple, intuitive freeware for Windows that uses tabs to organize your shortcuts into convenient groups. Default tabs for Applications, Games, Internet, and Utilities are provided at startup, but you can remove these and/or add any customizable category you please. In addition to the Desktop, you can transfer icons directly from any folder, as well as from the Start menu.

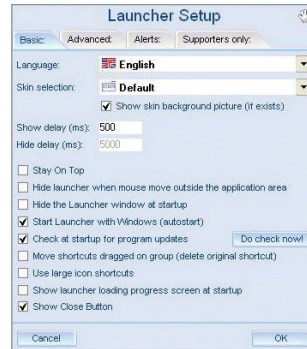
The launcher setup is simple but thorough. A Basic tab offers options for nearly two dozen supported languages and 16 skin selections. The autostart feature launches

the program automatically with Windows. There's an option to delete original shortcuts once you add them to the launcher, and an automatic program update check to make sure you stay patched and current. We felt that most of the Advanced tab options covered items that might just as well have been listed as Basic, including single-click launching, autoselecting a group when you mouse over a tab, and a button mode that shows compact icons without shortcut names. A Group Menu button on the main screen lets you quickly add, remove, or refresh tabs and back up groups to a ZIP file for easy restoration.

It's worth noting that a "supporters only" option offers additional features for users who make a donation through PayPal. The

most notable of these are the ability to enable a hotkey shortcut, password protection for setup and activation, and a custom-

izable activation area for the launcher. There's no minimum price listed for this option, but when we tried contributing a dollar (hey, writers are starving, too) we didn't receive the necessary codes within the promised 12- to 48-hour waiting period. Still, FSL Launcher may not be visually stunning, but it



definitely helps reign in icon chaos. ■

BY WILLIAM VAN WINKLE

FSL Launcher

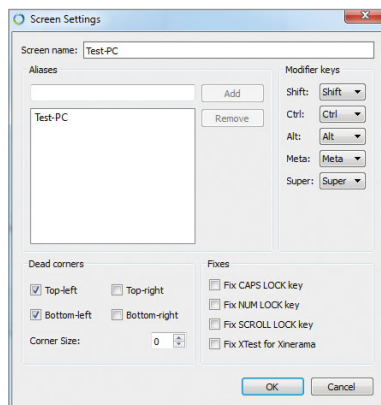
Free

fsl.sytes.net/launcher.html

Synergy 1.4.4 beta

If your work or play spans multiple computers in the same location, Synergy provides you with a sort of virtual KVM switch, letting you use one keyboard and mouse (but not monitor) for two or more Windows, Mac OS X, or Linux boxes. The only requirement is that all participating machines must be on the same wired or wireless LAN. The old days of having to know the server's IP addresses are even gone; you only need to know the name of each computer.

(Not sure about this? In Windows, click Start, right-click Computer, and select Properties.)



The new 1.4.4 beta we tried out gives you a more GUI-oriented configuration experience, mostly in regard to designating where each system is in relation to the other. Much like setting up a multimonitor configuration, you have to drag and drop the client systems onto a grid relative to the server system. You can then establish boundaries, or "dead corners," beyond which the mouse can't run as you drag across the newly extended desktop.

We did run into a hitch with having to open port 24800, Synergy's default port, in our firewall. If it's blocked, it's easy to think that Synergy's server and client(s) are communicating

because the System Tray icons show a lightning bolt and appear active. Only a mouse-over reveals that the two are "connecting" rather than "connected," which explains why your mouse is still stuck in its old cage.

In our mixed Windows and Mac environment, setup was much easier if we made the Windows system our server. And don't be surprised if you end up having to hit Synergy's Docs section or even Web search your way to support. This is open source, after all, and although the new GUI puts a pretty face on this excellent tool, the configuration may take some patience and experience. ■

BY WILLIAM VAN WINKLE

Synergy 1.4.4 beta

Free

synergy-foss.org

Steinberg Cubase 6

If you're into recording audio with computers, chances are you've heard of Steinberg's Cubase. It's among the top tier of DAW (digital audio workstation) apps enjoyed by professionals and prosumers. Essentially, once you graduate from recording your kids to recording and editing your band, this is where you live.

In a field as mature as DAW, it can be very difficult to come up with truly novel features. Often, user preferences come down to which product provides a better interface for given features rather than the novel features themselves. For example, Cubase's VST Amp Rack lets you simulate a dizzying range of amplifiers, performing as much mixing and controlling of source signals as you please. Nothing new there, but it's not just about twiddling with stomp boxes (16 of which are included). You can also customize the amplifier, cabinet, and the virtual microphones' position in relation to the amp. All of these settings can be saved as profiles that can then be mapped to physical stomp boxes during live performance.

Cubase 6 helps to blur the line between the creation and editing of both live and digital music. Take the Drum Editor module, which provides an intuitive work area for building and refining rhythms and riffs for dozens of percussion instruments. Although filled with granular controls, the interface is largely an intuitive grid of red dots (beats) on measure lines. From here, it's only a short hop to the live drum editor. Advanced analysis tools on drum tracks let you quantize live drums, turning them into something very much like MIDI rhythm. With this, you can easily edit passages, alter tempo, and easily convert existing drums to MIDI so as to replace them with a synth sound or other sample. Use the tempo detection feature to lock other tracks throughout the recording to that beat.

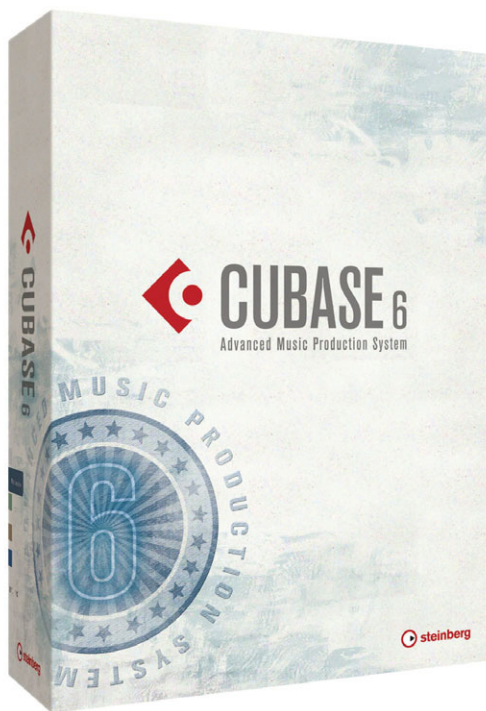
Cubase 6 also does an incredible job at streamlining workflow. Imagine doing a dozen takes of a song. Naturally, some takes will have passages that sound perfect while others flop. Simply lay out all of the takes in a common workspace, slice them up as you see fit, then highlight the best segments you want to keep for recombining into a sort of uber take. This captures the essence of what makes Cubase 6 exceptional: It can condense into minutes what used to take hours or days. You see this in other features, such as Track Edit Groups, which locks multiple tracks together and concurrently applies one edit to all of them.

There are a few areas where Steinberg has pursued some unique innovations; users of other DAW platforms might call this "proprietary." The biggest example is Cubase's VST Expression 2 and

Note Expression. This lets you edit MIDI controllers and notes simultaneously, rather than in separate editing lanes, where they can fall out of sync. Each note contains controller data, such as pitch bend or volume, so multiple values can be modified in one place. This dramatically reduces the difficulty involved in managing complex sample libraries, plus it makes translating from a MIDI sequence into a musical score much easier. The only catch is that this system is VST-dependent, so you need VST-compatible instruments and plug-ins. If you're OK with getting locked into one developer's ecosystem, then VST Expression can be a godsend.

Editing aside, Cubase 6 is loaded with other modules. The headliner is probably HALion Sonic SE, a synth engine featuring over 900 sounds and instruments that works seamlessly with VST Expression 2 for fast sound shaping. There are tons of audio effects, from SoftClipper, for adding harmonics, to our favorite, REVERence. REVERence applies environmentally oriented reverb modeled on the convolution reverb impulses of actual halls, cathedrals, and so on—real spaces modeled through the impulse response characteristics measured from microphone arrays. Another must-see is LoopMash 2, Cubase's novel drag-and-drop remixer, complete with more than 20 live and slice-based effects and the ability to work with up to two dozen scene memory slots during live performances, making it a real contender against Ableton Live.

Cubase 6 and all of its VST 3 plug-ins are fully surround-ready. The 64-bit software does require Windows 7 or Mac OS X 10.6, and it works with a USB-eLicensor key. If all of this sounds daunting, know that Steinberg includes two hours of video tutorial spanning from installation through advanced editing. Just dig in and be amazed. ■



Cubase 6
\$499.99
Steinberg
www.steinberg.net

BY WILLIAM VAN WINKLE

An Introduction To Perl Web Programming

Last month, we discussed using Apache to set up a basic Web server. This will let you serve static content, but you'll probably want more than that. Whether you want to run a powerful Web site on the Internet or within your own organization, you'll likely hit the limits of a standard Apache install.

That's not because Apache isn't up to the task. Rather, Apache itself is focused on a very narrow goal: deliver content. Thankfully, Apache has a module system to greatly expand its capabilities.

A handful of Apache modules will let your Web site handle more than just static content. Those modules relate to CGI (Common Gateway Interface). CGI is a standard method in which servers have external programs create Web content that is passed on to the browser. CGI programs are commonly known as CGI scripts, but they don't necessarily have to be scripts.

Created in 1987, Perl is a powerful scripting language that borrows many features and syntax from other Unix tools and languages. Because it's derived from multiple different sources for its functionality, the language is quirky for people used to traditional programming languages. Although it's a general-purpose scripting language, its forte lies in text manipulation.

Meet Perl

Perl's syntax comes from both traditional programming languages and Linux command line utilities. Because most people are generally fluent in one or the other, it can take a little while to become familiar with Perl.

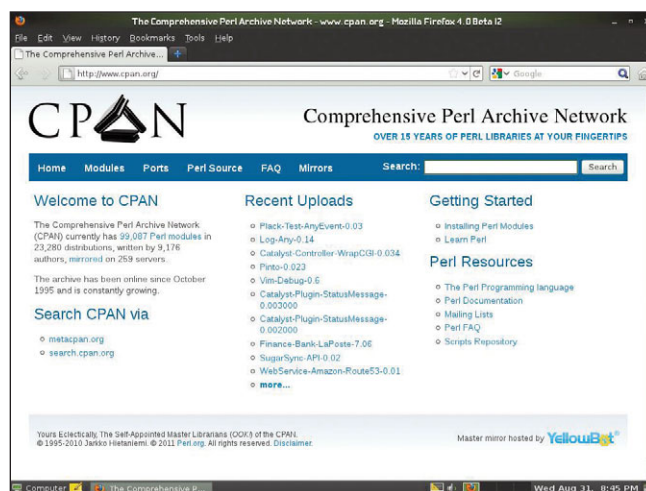
Perl has three data types—scalars, arrays of scalars, and hashes (which are arrays of arrays). You must use a specific character prefix with each of these in Perl. Scalars are prefixed with a dollar sign (\$), arrays with an at sign (@), and hashes with a percent sign (%). So \$a, @a, and %a are three different variables. Scalars can be any single value, such as a number, a single character, or a string of characters. This is in contrast to many programming languages, where variables have a definite type you must stay within. How Perl handles the variable depends on how you're interacting with the variable at that time. So, if you're performing

an arithmetic operation on \$a, Perl will treat it like a number, but if you're appending a string to it, it'll be treated like a string.

Most of the flow control mechanisms of Perl are similar to other programming languages, in that it has conditionals, loops, and subroutines statements. However, when it comes to text manipulation, Perl borrows heavily from the Linux command line set of tools. It's common when looking through Perl code to see regular expressions mixed in with standalone statements.

Perl also comes with a large online collection of Perl modules. These

modules extend Perl's capabilities to do almost anything you want, such as talking to databases or interacting with Web servers. These modules are collected in CPAN (Comprehensive Perl Archive Network). If you want to do something in Perl, chances are good that you'll find a module on CPAN (www.cpan.org) that'll help you do it. You can usually install modules from CPAN's Web site by typing **cpan** at a command line.



CPAN is a massive library of existing Perl modules that expand the capabilities of Perl.

Handling CGI Content

One very common instance of interacting with some form of a CGI script is a Web page that has form fields and a

Submit button. The Submit button is typically wired to a CGI script that resides on the server; when you enter the requested information, the CGI script processes the data in some manner (logging information to a file, emailing the data, generating a new Web page requiring further interaction).

The easiest way to handle CGI content with Perl is to include the Perl module named "CGI.pm." This module lets you interact with the CGI environment without having to manually do it yourself. This includes everything from looking at the HTTP headers the browser sent to reading form field values on Web pages. This module is so popular that it is included in every install of Perl by default.

For a simple example, suppose you have a Web page that has the following HTML code:

```
<form method="post" action="/cgi-bin/process.pl" enctype="multipart/form-data">
Enter your name: <input type="text" name="name" size="50" /><br />
Enter your email: <input type="text" name="email" size="50" /><br />
<input type="submit" name="" value="Go!" /></form>
```


For people who aren't familiar with HTML, this will prompt a user to enter his name and email address and give them a button labeled "Go!" When he clicks the "Go!" button, the Perl script named "process.pl" is called with the data from the Web page.

Suppose you wanted to pull the person's name and email address from the Web page. Create the Perl script process.pl, use the CGI.pm module, and then create a new object based on the CGI class. You can use that object to extract the data that's passed into the script. Use the param() function and specify a particular field name. The following code will print out what the user typed into the page in the above example:

```
#!/usr/ bin/perl
use CGI;
```

```
$cgi = new CGI;
```

```
print $cgi->header ( {-type => 'text/plain'} );
print "Name: " . $cgi->param("name") . "\n";
print "Email: " . $cgi->param("email") . "\n";
```

This is a very simple example that simply prints back the text the user entered, but it should give you a rough idea of how to use CGI.pm to create CGI scripts that handle certain Web page interactions.

Generate CGI Content

The output from all CGI scripts must be something a Web browser can process. It could be a plain-text file, like the earlier example, a binary file, or even a Web page. So, if you wanted, you could have a single CGI script that is as complex as any program. The script can give the user Web pages asking questions, process the response accordingly, and then output more Web pages based on the response.

This has to be pretty hard, right? After all, HTML is pretty complicated and not something you can casually pick up. Here too the CGI.pm module is ideal for the job because it can also create Web pages without having to know much about HTML. Certainly the more HTML you know the better, but even if you don't know much, CGI.pm is a handy way of dynamically creating Web pages.

To use CGI.pm to generate dynamic Web pages, you need to import all of its "standard" functions. Standard CGI.pm functions are shortcuts to creating regular HTML tags. Once you have the standard CGI.pm functions imported, you can output HTML tags by treating the functions as strings, which makes them well-suited to be used by Perl's print command. Remember, the script output is what is passed along to the Web browser, so by printing HTML tags you're creating a Web page on the fly.

A simple example of using CGI.pm to dynamically create content:

```
#!/usr/ bin/perl
use CGI qw/:standard/;

print header ( {-type => 'text/html'} );
print start_html( -title => "Simple Example" );
print start_form(-method => "POST", -action => "/cgi-bin/process.pl");
print "Enter your name: " . textfield ( -name => "name", -size => 50 ) . "<br>\n";
print "Enter your email: " . textfield ( -name => "email", -size => 50 ) . "\n";
print submit ( -name => "", -value => "Go!" );
print end_form();
print end_html();
```

This will create a Web page that asks the user for his name and email address and gives him a button labeled "Go!". This Perl script produces a Web page that the sample code in the previous section can process. Taking these two scripts together, the second creates a Web page while the first outputs the data from that page.

Clearly, there's a lot more to CGI script programming than what we can cover here. But Perl is a great tool that has been used since the earliest days of the Web and continues to be a viable option today. ■

BY JOHN JUNG

INFINITE LOOP

Beware The iPad 2 Mahogany Edition

We love a custom wood mod PC as much as the next enthusiast, but when it comes to iPads, perhaps it would be wise if we all exercised a little discretion. In South Carolina, Ashley McDowell, who is officially 22 but must have surely been born yesterday, reported the iPad she purchased for \$180 from two men who approached her in a McDonald's parking lot turned out to be a plank of wood dressed up to look like the ubiquitous tablet. McDowell says that despite the con, she remains committed to her entrepreneurial ventures, adding that she's in the market for a bridge if anyone has one for sale.



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DEUS EX

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\$49.99 (PC); \$59.99 (X360/PS3) • ESRB: (M)ature • Square Enix • deusex.com

It's been more than a decade since developer Ion Storm put out *Deus Ex*. The innovative game blended FPS gameplay with strong role-playing sensibilities. It was based around skill points that let you enhance JC Denton's attributes through nanotechnology. Your decisions in the huge game world led to gameplay focused on combat, stealth, hacking, or a blend. The dystopian environments were brought to life with a deep storyline rife with conspiracy and intrigue.

Three years later came the sequel, *Deus Ex: The Invisible War*. It enhanced the narrative arc but dumbed down much of what we enjoyed in the original. So we were leery heading into the prequel, *Deus Ex: Human Revolution*. As the game begins, you'll play through a tutorial and witness an attack on Sarif Industries, where a private security officer by the name of Adam Jensen is critically injured. Adam is saved by the application of substantial biomechanical augmentations to his body. You may be surprised by the use of biomechanical augmentations instead of nanotechnology until you become aware that *Human Revolution* predates the timeline of the original *Deus Ex* by approximately 20 years. There are clues for gamers that played through *Deus Ex*, but *Human Revolution* essentially sets the stage for the original game where things have gone seriously awry. For

example, you'll witness the events that lead to the formation of UNATCO (United Nations Anti-Terrorist Coalition), to which JC Denton belonged in the future *Deus Ex* timeline.

After six months convalescing, Adam sets out to discover what happened. Like the original *Deus Ex*, *Human Revolution* is a world that has a lot going on under its narrative hood: conspiracy, politics, ideological zealotry between pro- and anti-augmentation supporters, and more. The game originates in Detroit, but as it progresses you'll play through Shanghai, Montreal, and Singapore. Core first-person movement is complemented by seamless switching to a third-person perspective when required (for example, when climbing down ladders or taking cover).

As in the original game, decision-making and choices are key to gameplay. Want to play through the majority of the game without combat? Surprisingly, you can (almost). The game forces you into unavoidable boss battles, which are uninspired and break the game's desire to give you choice. Players can upgrade nearly everything on Adam in the game with the Praxis points you'll earn throughout the game. We got the conversation upgrade in our first playthrough and found that it unlocked options in our second time through. Your upgrades will be

primarily focused on combat, stealth, hacking, and social pillars.

Game visuals are good and carry the ambiance effectively. The world feels mostly believable but is unfortunately broken by the weak AI and odd graphical collision issues we encountered. Voice acting is decent if forgettable. Fortunately, the music is fitting and would be something we'd listen to when not playing the game. We loved the canned animations during certain combat sequences, but we came away unimpressed with how dramatically different in-game visuals are from the cutscenes.

Deus Ex: Human Revolution has so much going for it holistically that we were perfectly willing to set aside flaws because there's so much to enjoy. You can easily spend 40 to 50 hours exploring the world and then return for an experience that would feel remarkably different than your first. We're definitely ready to embark on the next chapter. ■





MADDEN 12

\$39.99 (PS2, PSP); \$49.99 (Wii); \$59.99 (X360, PS3)
ESRB: (E)veryone
EA Sports • www.ea.com/madden-nfl

More Of The Same —by Josh Compton

As we played through Madden NFL 12 from EA Sports, we couldn't help but have that feeling of sameness. Yes, the presentation is improved for the most part, the graphics have been tweaked a bit, and the series certainly hasn't taken a step backward. But there aren't enough new features or gameplay changes to separate this one from past iterations.

Let's get the unchanged elements of the game out of the way. Franchise mode is largely untouched; the gameplay feels very much the same; and, as something that may annoy hardcore fans of the game, the same commentary and clichéd lines are repeated over and over. In essence, the core of the game has received incremental changes while the developers focused their attention elsewhere.

The presentation, minus commentary, is well done. The new camera angles are interesting and exciting, but they don't add anything to the gameplay. Something that does, though, is the ability for players to go on

hot or cold streaks and the addition of player-specific tendencies to the game. The Superstar mode has been changed slightly so that practices mean more than they did before. Playing online is a better experience, and finding opponents to play against is easier.

Madden NFL 12 is not a bad game by any means. It's still a solid football simulator for die-hard and casual fans alike. But players who have been with the series for the last few years may be disappointed by the overall lack of evolution. ■



DRIVER

\$49.99 (PC, Wii); \$59.99 (X360, PS3)
ESRB: (T)een
Ubisoft • <http://www.ubi.com>

A Pleasant Surprise—by Josh Compton

As you may remember, the previous game in the Driver franchise, *Driv3r*, was a bit of a disappointment, especially the out-of-vehicle experience. But the games that came before it, including the original from 1999, were great and a lot of fun to play. *Driver: San Francisco* marks a return to form, and fans of the series will find a lot to love in this iteration.

The first thing you should know is that the character you play, John Tanner, is in a coma right from the beginning. But don't worry, because you'll still be driving all over the city in different vehicles trying to catch your arch-nemesis, Jericho. And if you're wondering how that's possible, don't worry because it's all explained in the storyline and with Tanner's ability to shift.

Shifting lets Tanner's consciousness move from person to person and take over driving whatever vehicle in which he finds himself behind the wheel. You can move to a faster vehicle to get a leg up in the chase or to cause crashes or create barriers your opponents must maneuver past, and much more. It's one of the most original racing components we've seen in a long time and it's what makes the game such a fun experience.

Driver: San Francisco may not be perfect, but the interesting and over-the-top story, Shift mechanic, and multiplayer component makes this a must-play for fans of the Driver series and racing games alike. ■





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TROPICO 4

\$39.99 (PC); \$49.99 (X360)
ESRB: (T)een • Kalypso Media
www.worldoftropico.com

Create Your Dream Island—by Barry Brenesal

Tropico 4 is a building sim where you have to balance resources, generate income, add new structures, and keep your people happy. Its location—a banana republic—and its customization makes this version different from previous Tropico games. You can personalize your character with a variety of traits that affect gameplay, try to keep any or all of eight factions in line, use subtle or brutal methods to bring down enemies, and court favor with foreign powers.

There's a new campaign of 20 successive missions, standalone scenarios, and the wonderful sandbox mode, which lets you create an island just the way you want it. You not only export raw materials and finished goods, but also import both. There are 20 new buildings that offer more of the same, but getting optional objectives from faction leaders and foreign powers is nice. We also liked the Ministry building that lets you hire five ministers to handle the economy, education, foreign affairs, interior, and defense. Candidates for each job are rated for intelligence, courage, and leadership qualities that can affect their performances.

All this may sound more like a strategy title, but Tropico 4 keeps things light and humorous, and you never feel bogged down in the details. It's engaging, easy to learn, and keeps drawing you back. ■



Nearly Identical To Its Predecessors—by Barry Brenesal

\$15 (PC, X360, PS3) • ESRB: (T)een
Hothead Games
www.thebaconing.com

And so it came to pass that the great hero DeathSpank was bored upon a rainy day. So he donned all six of the Thongs of Virtue at once, and in this manner unleashed the apocalyptic evil version of himself, the AntiSpank.

This will give you a pretty good idea of the background for Ron Gilbert's latest game, The Baconing. It follows directly upon the original DeathSpank and DeathSpank: Thongs of Virtue, which were released last fall. Players who enjoyed the genre send-up in the original game, with its prancing, arrogant, huge-muscled, empty-headed action hero, his love of

doing good, and the satirical put-downs in dialog with just about every questgiver he encounters, will find much more of the same here.

The Baconing is also nearly identical to its predecessors in its Diablo-like gameplay and cardboard-cutout artwork. You may laugh at the wit, but the game offers many standard action genre features, and then some: easy switching via Tab between two sets of weapons, fortune cookies to accumulate that give quest hints, hero cards that let you select an attribute to upgrade while leveling, etc.

Where The Baconing differs from its predecessors is in a few details. Shield-blocking now occurs as you hold down the Spacebar, and this is useful in helping to reflect ranged attacks, which are more prominent in the game. Releasing the Spacebar after the shield bar at the bottom of the display fills up executes a shield bash that stuns. You can also charge up ranged weapons of your own by holding down the right mouse button.

In short, if you liked DeathSpank, here's more of the same. That's reason enough to buy it. ■





WARHAMMER
40,000

SPACE MARINE

\$49.99 (PC); \$59.99 (X360/PS3)
ESRB: (M)ature
THQ • spacemarine.com

Mindlessly Pleasant Third-Person Action —by Dr. Malaprop

Developer Relic Entertainment has created a delightfully action-packed third-person shooter with a heavy hack-and-slash combat mechanic. As Captain Titus, you and a handful of your brothers are tasked to hold one of humanity's massive forge worlds until additional support arrives. You'll primarily weaken foes at a distance before laying in with melee combat. This combat style is interspersed with cutscenes and set pieces for variety, and new types of enemies keep gameplay fresh. As you play through new multiplayer modes, you'll gain additional weapons and perks as you level-up. Fans of the 40,000 series may also enjoy the broad customization options for your multiplayer avatar.

Space Marine has some flaws, but it doesn't keep the sheer heft of this game from shifting us into really playing through and enjoying the entire game. ■



It's A Ball!—by Dr. Malaprop

\$10 (PC, X360)
ESRB: (E10+)Everyone 10+
Atlus • atlus.com/rockofages

Rock Of Ages defies easy description: It's a tower defense game combined with the ball-rolling antics of Super Monkeyball/Marble Madness set to an art style that harkens to animated bits from "Monty Python." It's actually very odd, but it works to hilarious results.

As Sisyphus, you control your giant boulder downhill through defenses to knock through an enemy's gate while ensuring the defenses you've built on your side of the hill prevent the enemy's boulder from getting through your gate. Stuff destroyed along the way generates funds, which can be applied to better defenses.

The game is easy to get into but becomes difficult in the latter stages because the AI seems overly knowledgeable. By that point, gameplay may begin to feel repetitive. We'd also like to see a clear assessment of the effectiveness of emplacements, because it's challenging to understand how they affect the outcome once balls reach the bottom. That said, in a world of constant sequels, Rock Of Ages is a well-priced, innovative game with an excellent multiplayer mode. ■



The Kinect Western —by Dr. Malaprop

Developer Twisted Pixel Games has created a hilarious on-rails Kinect Western that's set as a puppet show with a live audience as the backdrop. You play as an undead marionette set on a path of revenge after being betrayed by his posse. Your left hand primarily controls the movement of the strings to jump and move from side to side. Your right is the gun

\$39.99 (X360 with Kinect)
ESRB: (T)een • Microsoft
thegunstringer.com



hand, and you shoot by snapping your wrist up in a pew-pew movement. Shooting entails locking onto six targets and then shooting once to take them out; reloads are automatic. Action is non-stop, varied, and

comical. Sequences that have you firing with both hands are like patting your head and rubbing your belly.

The Gunstringer is a must-have game if you own a Kinect. You'll have a colorful narrator drawing the story forward, making you laugh out loud repeatedly. We experienced occasional drops in the shooting controls, but overall we walked away very happy. Better yet, bring in a friend and play through the game in co-op. Ignore The Gunstringer at your peril if you truly stand against video game whimsy and joy. ■

RESISTANCE 3

\$59.99 (PS3) • ESRB: (M)ature
Sony Computer Entertainment
myresistance.net

Picking Up The Pieces—by Dr. Malaprop

Nathan Hale's story ended in *Resistance 2*, and the third game picks up four years later. *Resistance 3* adds emotion via the slightly generic character of Joseph Capelli. We liked the brief timeline history intro to the first two games that leads to 1957 in Oklahoma, where Joseph lives in a human settlement with his wife and son. By this point, the Chimera have mostly overrun the Earth and small pockets of humans are doing their best to survive.

Naturally, things don't stay calm for long. Trouble comes to the community and Joseph sets out on a journey to New York City with a certain Doctor Malikov to destroy a Chimeran outpost in NYC that's slowly freezing the planet and putting humanity at risk of extinction. The journey spans middle America, and the duo encounter some very different types of human settlements.

The game features online and split-screen co-op and eight-on-eight multiplayer including Deathmatch and CTF. Unfortunately, the class-based co-op we liked in *Resistance 2* is no longer available. We loved the variety and heft of weapons. For example, there's the Atomizer gun, which sucks enemies into a black hole, and the Auger, which lets you track and shoot enemies through walls. Even the lowly Magnum handgun is fun. Each bullet can serve as a mini-bomb in its secondary firing mode. All guns can be leveled up twice by using them extensively. It's very satisfying. While there's no regenerative health in combat, it can be refilled by taking out enemies and collecting health packs.

Resistance 3 features 3D and Move support, animates well, and has a fitting soundtrack. We enjoyed the campaign but were disappointed by the final combat sequence. As they say, though, it's about the journey. ■



Razer Hydra Motion Control PC Gaming—by Dr. Malaprop

Razer has a reputation for creating gamer-friendly hardware, so we were surprised to hear that the company was releasing a motion-control device for the PC. Was it going to replicate Wii controls on the PC? That's a negatory. It should have been obvious from the outset that Razer would create a controller appropriate to the platform and that the Hydra would be a controller aimed at core PC gamers.

Upon opening the package, you'll find identical motion controllers for each hand, a base station, cables, and a copy of *Portal 2*. The controllers are comfortable to hold for extended periods and feature five face buttons, a clickable analog stick, trigger, and bumper buttons. The base station with the glowing orb plugs into your PC via USB and puts out a very weak magnetic field to provide very precise multidimensional movements with the controllers. These should remain within a 2- to 3-foot radius of the base. Each

controller is connected to the base with a braided cable. Install the driver and you're good to play.

Portal 2 is built with Hydra support and includes new levels that specifically take advantage of the device. The nature of *Portal 2* plays handily to the Hydra's strengths, and they pair well together. Unfortunately, the

125-plus games listed with Hydra support don't depend on the device, so, thus far, the scenario is a cool device for a single game, but one that you'd not likely use for the majority of other games. This situation may change, but until then, you're spending a lot of money to enjoy a unique and enjoyable version of *Portal 2*. The mess of cables also left us wishing for wireless controllers. Hydra has potential, but it's hard to recommend without a larger supporting game catalog. ■

\$139.99
Razer
razerzone.com



Advertisers, Police Thyselves

Privacy Gets Privatized

Can the online advertising industry regulate itself when it comes to guarding user data and giving consumers greater control over how their browsing history is used and how they are tracked online?

Although many state and national legislators proposed new laws and government regulations designed to enforce uniform practices regarding how companies could collect and use consumer data for targeting ads, the FTC in 2009 urged the Internet advertising ecosystem to police itself. Subsequently, the FTC issued detailed privacy guidelines on fair disclosure of online behavioral advertising tracking and the tools it felt consumers needed for opting out of these systems. So, two years later, how are things working out?

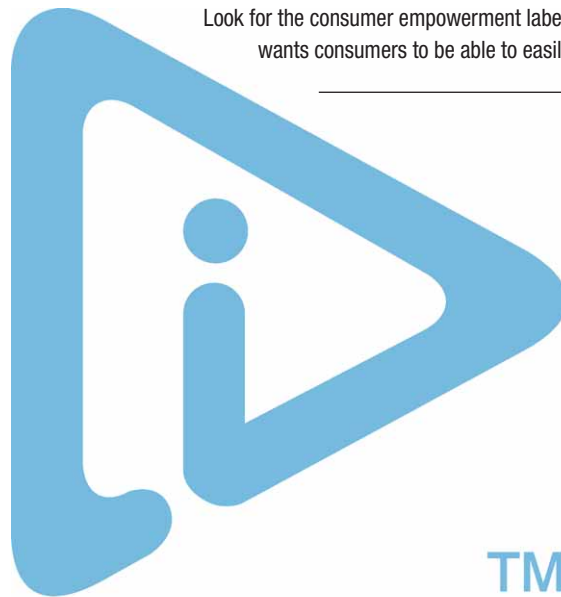
"I think the attitude now is a grudging acceptance that the industry is moving, while it may not be perfect," says Fran Maier, president of TRUSTe, which provides privacy services to publishers and consumer brands. "I think it is moving at a pretty quick pace."

The "Advertising Option Icon," the brainchild of a coalition of business and advertising associations known as the Digital Advertising Alliance, is at the lead of an industry-wide effort to better inform consumers of OBA and give

them ways of controlling it. In fact, the Advertising Option Icon now appears on billions of ads distributed across Web sites; TRUSTe alone is responsible for tagging over 10 billion of these ads a month, and many billions more are served by other approved ad vendors, such as Evidon and Double Verify.

Advertising Option Icons are triangular icons that are supposed to appear on all ads that employ behavioral tracking in order to target that ad to the viewer. When clicked, the icon pops up a disclosure

Look for the consumer empowerment label. Eventually, the ad industry wants consumers to be able to easily recognize this icon.



informing the user that the ad is behaviorally targeted: The advertiser used your recent browsing activity to determine an ad likely to be of interest to you. The user then can elect to click through to the advertiser's privacy policy to get more information about OBA or to opt out of further targeting.

"Clarity, notice, who is tracking them for what purpose, and choice," are the self-regulatory measures the FTC is looking for, says David Vladek, director of the FTC's Bureau of Consumer

When clicked, the icon pops up a disclosure informing the user that the ad is behaviorally targeted . . .

Protection, at an industry gathering hosted by Evidon this summer. “The consumers have a very powerful interest in being able to control their own personal data on the Internet.

“We have urged marketers to make sure consumers have the ability not to be tracked.”

According to the latest research from TRUSTe and Harris Interactive, 25% of consumers surveyed said they regularly opt out of online tracking, and 40% say they regularly delete browser cookies/history/cache.

But when it comes to actually seeing and using the Advertising Option Icons, they can be hard to come by. And even if consumers do see the new symbol that flags OBA banners, only 5% of consumers surveyed by TRUSTe say they recall seeing it anywhere yet. “That is after not even 6 months,” argues Maier. “For anything new in the environment, I think that is a reasonable number.”

Opting Not To Opt Out?

Even industry insiders admit that the process of enacting self-regulation for OBA has been long and slow. It took more than a year for the allied ad associations to settle on icons and technical processes to deploy the system, and the tagged ads only started appearing in large numbers in 2011. And it was only on Aug. 29 of this year that the largest digital ad group, the Interactive Advertising Bureau, began enforcing a code of conduct on all members, requiring its members use the kinds of prominent disclosure of behavioral

The screenshot shows the 'Companies Customizing Ads For Your Browser (55)' section. It lists companies like Markit On Demand, Meteor Solutions, Inc., Glam Media, Inc., Media6Degrees, MediaMath, Inc., Rocket Fuel Inc., Tremor Video, Inc., Turn, Inc., RadiumOne, TidalTV, XGraph, and OwnerIQ. Each company has a checkbox for selection. A yellow callout box on the left explains that 55 participating companies have enabled interest-based ads and provides instructions on how to opt out. At the bottom, there is a 'Submit your choices' button and a note about storing preferences in the browser.

At www.aboutads.info, consumers can scan their own browser to see which of over 80 advertisers are planting cookies. At that time, consumers can opt out of this.

tracking and opt-out mechanisms the ad icons represent. Anyone can now go to www.aboutads.info and have their browser scanned to detect the ad networks and sites that have planted cookies in their browser. A total of 82 companies are represented in the list, and the user can opt out of being targeted by any or all of them.

But the rate at which people actually see these ad icons and actually electing to read through the materials and opt out of ad targeting are quite low.

“The opt out rates are well under 1%,” says Scott Meyer, CEO of Evidon, which

supplies ad icon and opt out services to over 50 ad networks and 100 consumer brands. Meyer says that Evidon serves over 15 billion notices on ads each month and that over 80 million users in the United States see an ad with Evidon’s “Ad Choices” icon every week.

“On average, for every 1 million ad impressions served by Evidon with the icon, one person will opt out. We have processed over 500,000 opt-out requests.”

Nothing But The Truth

However prominent the new ad tagging and OBA notification may

Anyone can now go to www.aboutads.info and have their browser scanned to detect the ad networks and sites that have planted cookies in their browser.

be, critics of the program still argue that having the industry police itself is more self-serving than self-regulatory. Joseph Turow, the Robert Lewis Shayon Professor of Communication at the University of Pennsylvania's Annenberg School for Communication, says that the big fear among advertisers is that the FTC could force on the industry an "opt in" policy, which would require a user's prior consent to being targeted with behavioral ads.

"I think [advertisers] see the icon as a way to beat back regulation and opt in [requirements] while still trying to mollify the public and make people feel they shouldn't opt out," he says. He complains that the definitions used to designate behaviorally targeted ads don't embrace the full range of tracking activities advertisers use. He also feels that the explanations of the practices soft-peddle the potential risks.

Even the industry's documentation of opt-out procedures indicates that opting out of targeted advertising doesn't actually prevent these companies from collecting data from your browser; it simply discontinues targeted advertising that uses that data. According to Aboutads.info's FAQ (www.aboutads.info/how-interest-based-ads-work), despite opting out of behaviorally targeted advertising "data may be collected and used by participating companies and Web sites for a variety of purposes unrelated to advertising, including the operation of online products and services (like recognizing a return visitor to an online photo or social networking service)."

The companies behind the privacy efforts are quick to point out that their new self-regulation efforts are indeed educating users and reassuring them that their privacy isn't being violated. Maier says that consumers have tended to assume erroneously that online behavioral tracking ties a browser's history to personally identifiable information about a user, such as address, name, or email. The general practice among these companies, however, is to anonymize a browser by simply assigning to a cookie a random number that is tracked.

"Our research finds that if the consumer knew that personally identifiable information wasn't being shared, then their comfort level with behavioral ads goes up," Maier says.

While Turow criticizes the rate of interaction with the ad units tagged with Ad Choices icons, Meyer responds that the success of the program shouldn't be measured by click-through rates. "The metrics that really matter are the numbers of brands and ad networks and whether the icons are there. We are making sure that when someone wants to engage with it they always can," he says. Like Maier, he argues that when people better understand how the targeting systems work, "they feel more positive about the brand."

Of course, this doesn't mean that self-regulation has achieved its goal of clarity and transparency. One of the challenges in this program has been explaining to "civilians" outside of the digital advertising industry a technical system of interwoven

cookies, ad servers, publishers, and ad networks that confuses even insiders. Meyer admits the language in these opt out mechanisms needs simplification.

"One civilian said, 'I shouldn't have to learn all about your business to opt-out. Don't make me read a contract.'"

For the time being, most agree that industry self-regulation is likely going to be the FTC's solution. Although recent legislative efforts have called for laws overseeing online privacy, ultimately much of the enforcement will fall to the FTC in the end. Turow admits that "historically legislators do not like to regulate things of this sort if they can help it."

Meyer says the FTC is still making it clear where it wants the industry to head. The agency is pressing for better solutions to the problems of data being collected even after users opt out from targeted ads. And although the government agencies and elected officials are keeping a close eye on the effectiveness of the Ad Choices labeling project, the FTC itself is pressing for a more comprehensive solution—a "Do Not Track" mechanism. This tool would likely be located on the browser and live as a persistent cookie that signals a user's preferences about tracking and targeting. Such a system would require cooperation among all ad networks, Web sites, and advertisers so that the entire Web ecosystem agrees to honor the settings it finds in our browsers. The battle over that proposal is just heating up. ■

BY STEVE SMITH

"One civilian said, 'I shouldn't have to learn all about your business to opt out. Don't make me read a contract.'"

—Scott Meyer, Evidon CEO

An Interview With Mountain Mods' Ben Rising

Ben Rising is the founder, owner, and CEO of Mountain Mods, a leader in innovative computer chassis manufacturing.

BY BARRY BRENESAL

CPU How long has Mountain Mods been building custom cases?

BR We first established a Web presence in June, 2003. So it's been about 8 years.

CPU Were you doing anything locally along similar lines before going national?

BR As a company, no. For myself, I'd been doing some mod work for about four years prior. When I started Mountain Mods, I was actually a network engineer for a large grocery outlet.

CPU So what led you to take the leap?

BR In 2001, I'd taken on the project of creating a dual chassis, which ultimately became the prototype for our award-winning U2-UFO. I built it entirely by hand, and posted pictures on a forum where I was a member. A gentleman from New York wanted a near duplicate. I'd already experienced the insurmountable time commitment required to build one myself, and thought it might be a better option to have a small number of them manufactured.

CPU How many did you end up selling of that first prototype model?

BR I entered into a partnership with a local fabrication shop to



produce 50 units. We did it in intervals of 10, 20, and 20. Those first 50 sold out within three months.

CPU Was this what convinced you that there was a solid market in customized cases?

BR At first it was more of an experiment on my part. There wasn't any expectation of large sales and return on investment. In reality, I started Mountain Mods with \$3,000. Since then, we've turned that money into quite a big sum, so in my books, the experiment was a success.

CPU When did the market for custom cases start taking off?

BR I think that Mountain Mods has really built that market. Before us, you basically had a few people who

were modifying existing chassis: nobody was making something from the ground up. I would say it was around 2005, perhaps 2006 when we saw a great increase in demand—about the time we went hyper-modular with the design. It's been growing exponentially ever since.

CPU How would you say that the market for custom cases has changed over the years?

BR We've evolved our designs from end user input, and they've wanted more environmental alterations. This has led to more integration of water cooling—primarily radiators. Form factors, too: when Mountain Mods started, we only had one motherboard tray, the ATX form factor, and now we manufacture four, from ATX up to HPTX.

CPU Since your company's development is guided directly by your market, what aspects of that market have surprised you the most?

BR When I first began, I thought this would primarily be a gamer's market. What I found was that while gamers certainly represent a large percentage of our sales, there's a still greater market out there for higher-end industrial users, such as architects, medical clientele, Wall Street firms. People that require a huge capacity for number crunching.

CPU You mentioned "hyper-modular" design, a term

we've seen several times on your site. What does hyper-modular mean? What sets it apart from the competition?

BR What we mean by hyper-modular is that every component in the chassis can be taken apart. All hyper-modular units come flat-packed. The bottom panel is one piece; the back panel is another; the front panel is a third. You have struts, L-shaped brackets that go through the front and back, and this gives you your frame, with three side panels.

This hyper-modularity not only allows disassembly and easy shipping, it also supports the rotation of panels—on the Ascension, side panels can rotate 180 degrees, for instance, and the back panels on the UFO can rotate 90 degrees. This is the essence of the design. It provides a huge flexibility to the chassis, with many different rotations, types and acrylic colors of panels, delivering a wide range of options. On a U2-UFO, the math comes out to approximately 36,000 variations on a single chassis.

CPU Which is currently your bestselling case?

BR The UFO has obviously had the most sales, because it's been around the longest. But if we look at the current market, it would be the Extended Ascension. It's six inches deeper and six inches taller than the UFO, which is in turn six inches deeper than our Ascension model. You have a lot more room in the Extended Ascension for such things as multiple radiators, more heat dissipation, and more components.

The larger cases for us have a greater market because of the technology. You have a lot of people building EVGA SR-2 units, which are HPTX form factor—a huge monster of a board. They run dual Xeon processors overclocked, and two to four graphics cards, also overclocked. That's a substantial heat load; and then attempting to put sufficient water-cooling on top of that in a normal-sized chassis is exceptionally difficult. That means going with an Extended

“What we mean by hyper-modular is that every component in the chassis can be taken apart.”

Ascension, since all those components fit in there, and you still have the space for a number of radiators to adequately cool at very low fan speed for silence.

CPU Let's discuss the Flash CYO Picker feature on your site. Has it proved a big success for you? Are a lot of people using that?

BR A very large number. It makes things much easier as far as understanding the cases and how they go together, as well as understanding the multitude of options we offer. It was created and introduced in December, 2009. I was corresponding with a colleague I'd known since college, a programmer who was unemployed at the time and said he would love to take on the project. He did the base programming—and then, lo and behold, we found an unemployed customer who had worked for Siemens doing rendering. He asked specifically if we needed any help in his specialty, and the timing was right.

It was a bit hidden on the Web site, but now we've got it in place where there's a big banner. As far as a percentage of people using the Flash CYO Picker, I would suggest it's up around 90%.

CPU It does streamline things, doesn't it?

BR Especially when you have, for example, the U2-UFO, with 36,000 combinations. The only way you'll be able to get a feel for the enormous number of configurable differences is through something like the Flash Picker. We actually had the concept several years earlier, and just didn't know how to implement it—or have the time to do so.

CPU What are the most-requested features in your custom cases, these days?

BR We have so many different requests, that it would be very difficult to single out one more than the others. We have our ballpark standards—all customized, in that we make them here in small numbers, but they are still stock. Among these, the greatest demand is for a number of radiator ports that can be attached.

CPU What advice do you have for customers shopping for a computer case?

BR The advice I would give to consumers is try to honor those merchants who are innovative, as opposed to imitative. That's the greatest concern that I have, not just as a manufacturer but as a consumer. The more we purchase things that are duplicates—piggybacking on other people's innovations—the less we will have of anything new.

When a customer comes to me and asks what computer case they should get, it's really based upon the components they need. So take into consideration what you need inside that case, and the type of cooling that's a necessity for those components. After all, a chassis is nothing but a home for your components. If you get a case that can't handle the components inside, it's like trying to fit a 10-person family into a studio apartment. ■



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A Peek At What's Brewing In The Laboratory

by Anastasia Poland

Software Battles Bogus Online Opinions

Cornell University researchers have found that people are unable to tell the difference between real and fake online reviews. Their linguistic statistical analysis software almost completely solves the issue, with rates of identifying opinion spam at nearly 90%.

Which of these two hotel reviews is deceptive opinion spam?

Date of review: Jun 9, 2006

4 people found this review helpful

I have stayed at many hotels traveling for both business and pleasure and I can honestly stay that The James is tops. The service at the hotel is first class. The rooms are modern and very comfortable. The location is perfect within walking distance to all of the great sights and restaurants. Highly recommend to both business travellers and couples.

Date of review: Jun 9, 2006

4 people found this review helpful

My husband and I stayed at the James Chicago Hotel for our anniversary. This place is fantastic! We knew as soon as we arrived we made the right choice! The rooms are BEAUTIFUL and the staff very attentive and wonderful!! The area of the hotel is great, since I love to shop I couldn't ask for more!! We will definatly be back to Chicago and we will for sure be back to the James Chicago.

Opinion sites now give us information about most everything. The problem is, some of those reviews are faked, and it's darn hard to separate the wheat from the chaff.

Enter Yejin Choi and a team of researchers at Cornell University into the fray of fakes. Choi has created software that uses statistical techniques to differentiate the real reviews from the phonies by analyzing the writing styles of the two. The team paid 400 people to fabricate positive reviews of 20 Chicago hotels and then compared them to real reviews of the same. What showed up in the comparison was perfect fodder for a linguistic program to process.

"When people try to write deceptive reviews, their minds appear to operate very differently from when they write about their real experience," Choi explains. "For instance, we find that truthful reviewers naturally focus on spatial details (bathroom,

floor, small, location) of their experience, while deceptive reviewers have difficulties in filling in spatial information."

"As a result, deceptive reviewers will focus on other types of information, such as why they went to Chicago. Deceptive reviews demonstrate the characteristics of imaginative writing, such as frequent usage of verbs and adverbs, while truthful reviews demonstrate the characteristics of informative writing, [such as] frequent usage of nouns and adjectives (except superlatives, which are more dominant in deceptive reviews due to the exaggerating tendency of deceptive reviewers)."

The scientists also discovered that humans are lousy at identifying fake reviews. They found that a person's rate of successful identification was about the same as chance. Choi says that the researchers' software is up to 90% accurate. ■

AI System Lends A Hand To Human Plane Inspectors

For frequent flyers, any improvement in airline safety is a big plus. Australia's Swinburne University of Technology (along with the Defence Materials Technology Centre, GKN Aerospace, and Defence Science Technology Organisation) has definitely scored with its newest AI airplane inspection system, which efficiently utilizes ultrasonic waves to find defects in composite materials used in plane parts.

Swinburne's professor Romesh Nagarajah, who heads the Robotics and

Non-Contact Inspection research team, explains the beauty of their automated system: "The AI system works by analyzing the (ultrasonic) return signals obtained from the inspected multilayered composite aerospace components, and identifying patterns within the signals that signify the presence, type, and location of a defect. Various artificial intelligence tools, including neural networks and support vector machines, are used in analyzing the signals." The AI system is objective, unlike a human

reading data, and is much faster and detailed than a human counterpart.

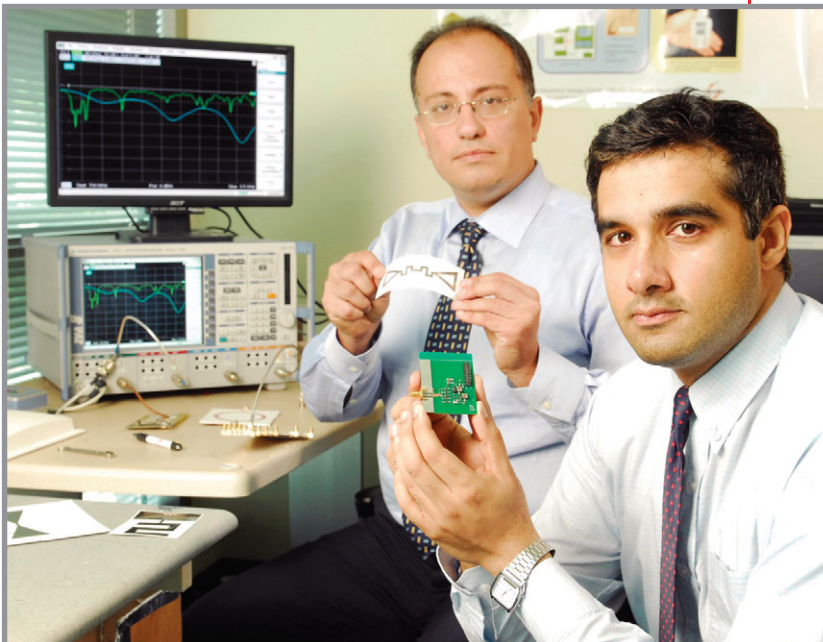
The researchers were challenged by training their system to know the difference between defective and non-defective materials. They worked hard to "identify the best possible signal processing approach to accurately identify signal patterns that denote the presence of a defect," explains Nagarajah. Successful on both counts, the AI system can also be programmed to search out atypical defects. ■

Georgia Tech Professor Pulls Power Out Of Thin Air

If as a superhero you had super-sight powers, you'd be able to see the network of electromagnetic energy whirling around us, energy emitted by radios, radar, TVs, cell phone towers, and satellite systems, to name a few. Although Georgia Tech professor Manos Tentzeris hasn't been so gifted (at least to our knowledge), he and his team know that energy is just out there wasting away . . . until they harness it for a new use.

Tentzeris and his team have created energy scavengers in the form of wide-band antennae and sensors printed on paper and sheets of polymer that detect and slurp these signals from the air and repurpose them for other uses. The devices convert the energy from AC to DC and then squirrel it away into storage mechanisms. Thus far, the team has been able to pull in frequencies ranging from 100MHz to 15GHz, and in their work with TV emissions, they were able to run a temperature sensor with the energy they snagged.

As Tentzeris and his team up the amperage (as it were) on how much ambient energy they can glean, storage in a supercapacitor that acts like a battery is the next step. The uses are many. Besides power for small electronics, sensors for a host of industries, RFID tags for consumer goods, and safety and medical monitoring in a variety of fields, the scavenging technology can also buddy up and augment current systems in use (think solar panels). ■



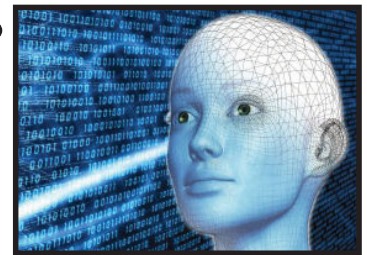
Grad student Rushi Vyas (front) and professor Manos Tentzeris (back) display two energy-scavenging devices that they've been working on at Georgia Tech. Their team is gleaming ambient electromagnetic energy "waste" from the air to be reused, fueling sensors, electronics, RFID tags, and more. (Photo credit: Gary Meek)

Personalized & Computerized: Future Healthcare Just For You

Wouldn't it be ideal if the drug prescribed for your heart condition were exactly what your body needed, not a dose based on the average Joe who was in the heart study for that medicine? That's what a European consortium of academics and scientists hope to realize with their new project dubbed "ITFoM (IT Future of Medicine)."

Though the program is limited to the theoretical stage at the moment, the researchers are working on their "roadmap

A recently launched pan-European project called IT Future of Medicine is working to change the face of healthcare by including personal



plans for every face who needs healthcare. With a vastly networked system, the scientists will be creating databases where everyone's key physical information resides, so that treatment will be based on each person's individual makeup.

for 10 years of research," says the University of Manchester's Dr. Daniel Jameson, one of the academic leads on the project. "The final goal for this work is an individualized queryable model of a human, representing systems from the molecular level upward. Along the way we would expect to see development of infrastructure—software, hardware, data standards, acquisition and governance standards—to support this. We would also expect to see development of models of diseases and related metabolism which would ultimately be incorporated into the 'whole' human model."

What that means is that any medical professional could call up a patient's profile and know the exact effects of a drug or treatment on that person. "Being able to predict the action of a drug based on an individual's makeup (genetics, proteomics, or whatever other test results we have for that person) would lead to massive benefits," explains Jameson.

Moreover, once through, the project is scalable beyond the current model to include other fields. Jameson mentions that agriculture would be a likely candidate, both in livestock and crop responses to a variety of conditions and chemical interactions. ■

Look For *CPU* At These LAN Parties Across The Nation—& Beyond!

10.07-09.11

Rage LAN - Hamburg, NY
jklan.com

10.08.11

LAN Lordz - Wichita, KS
www.lankansas.com

LAN Party Extravaganza - Kenmore, NY
www.lanpartyextravaganza.com/index.php

10.14.11

Intel LANFest Sacramento Fall 2011 - Folsom, CA
lanfest.intel.com/?page=event&eventid=1774

10.14-15.11

Geex Gaming and Electronics Expo - Salt Lake City, UT
geexshow.com

10.14-16.11

GeForce LAN 6 - USS Hornet, Alameda, CA
www.geforce.com/landingpage/geforce-lan

10.15.11

NGC's LAN-A-GEDDON - Greenville, TX
www.networkgamingclub.com

Oklahoma Gamers Group - Oklahoma City, OK
www.okgg.org

10.21.11

NWA GameCon - Springdale, AR
www.nwagamecon.com

10.22.11

Dragonware - Winston-Salem, NC
www.dragonware.com

LANifesto - Montgomery, AL
lanifesto.org

Pixelation: Black Ops-tober - Kettering, OH
www.72dpionline.com

WV Gamers - Eugene, OR
www.wvgamers.com

10.22-23.11

BHN LAN - Largo, FL
lan2011bhn.eventbrite.com

10.28.11

Intel LANFest New Mexico - Rio Rancho, NM
lanfest.intel.com/?page=event&eventid=1786

10.29.11

Naois Gaming - York, PA
www.naoisgaming.com

11.11.11

Big Shot Gaming Fall 2011 LAN Party -
Mount Pleasant, MI
www.bigshotgaming.com

11.12.11

LANifesto - Montgomery, AL
lanifesto.org

LAN Lordz - Wichita, KS
lanlordz.net

11.19.11

Nexus LAN - Huber Heights, OH
www.nexuslan.org

NGC's LAN-A-GEDDON - Greenville, TX
www.networkgamingclub.com

Oklahoma Gamers Group - Oklahoma City, OK
www.okgg.org

WV Gamers - Eugene, OR
www.wvgamers.com

11.26.11

Naois Gaming - York, PA
www.naoisgaming.com

12.02.11

GNW LAN - Super Secret LAN - Vancouver, WA
www.gnwlan.com

12.10.11

LAN Lordz - Wichita, KS
lanlordz.net

12.17.11

LANifesto - Montgomery, AL
lanifesto.org

NGC's LAN-A-GEDDON - Greenville, TX
www.networkgamingclub.com

Oklahoma Gamers Group - Oklahoma City, OK
www.okgg.org

02.04.12

Carolina Game Summit - Goldsboro, NC
www.CarolinaGamesSummit.com

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Q&A With Ruben Mookerjee

Corsair's Components

GM Finds Life

Beyond Memory

From HP to Labtec, on to Logitech, and finally hired by Corsair CEO Andy Paul to head up the company's nonmemory business, Ruben Mookerjee has been around the tech block. He knows and loves consumer gear like few others. The question is whether he can extend Corsair's reputation as the go-to name in performance memory to its many other product types. Plenty of companies crash and burn with such efforts, so what's Mookerjee's game plan for world domination?

Q You've personally been all over the PC accessories retail market. What is the No. 1 ingredient for a product's commercial success in this space?

RM Passion for what you do. You can't fake it. It's a bit of a cliché, but to emulate the sort of sustained success that Bill and Dave built at HP, or [Daniel Borel] and Guerrino [De Luca] built at Logitech, or Andy Paul has built at Corsair, you have to understand and share the passion of the people who buy and use your products.

At Corsair, we always refer to ourselves and our user community as PC enthusiasts—whether an enthusiast user, builder, overclocker, or PC gamer. Anyone who has had to drive company strategy knows that the toughest part is deciding what products *not* to do. Nimble companies that share their customers' passion can answer that question far more successfully.

Q One of the most overused lines in company marketing is, "We're special because we listen to our customers." So without devolving into clichés, what role, if any, do Corsair customers play in product evolution?

RM You're right—it is a very overused line. You have to do more than just listen. You really have to

be your customer, and not just hiring a few experts in the development lab but at senior executive levels. As successful companies scale up, they often lose some of that firsthand enthusiasm for using their products. Unless you *are* your customer, you won't be able to interpret the data correctly and make the intellectual leap from what buyers say they want to what they really need.

Look at how we got into PSUs back in 2006. Customers were buying our custom-designed, hand-tested DRAM because they were overclocking their systems. Overclocked PCs can place very high stress on their power supplies, and we realized that many PSU vendors were cutting so many costs that they weren't even meeting the basic ATX spec. A failed PSU in an overclocked system can take out your CPU, motherboard, and video cards in seconds. So we launched the Corsair HX PSU series.

Q With so many product categories, Corsair risks following other vendors that went from doing one thing exceptionally well to doing many things . . . passably. Is it possible to retain excellence in every category?

RM That question obsesses us every day. Just because we add new technologies and product lines doesn't



mean we've lost our vision of the PC enthusiast core customer. We don't make products for everyone, and we don't sell to OEMs. However, there are "adjacent" markets to the DIY enthusiast where we believe we can still expand. The most promising to us is PC gaming.

This month, I have the privilege of announcing Corsair's new Vengeance Gaming Peripherals line. These are PC gaming mice, keyboards, and headsets that have adventurous, innovative designs and use premium materials that PC gamers haven't seen before. For six years at Logitech, I headed up the very talented team that conceived, designed, and developed the G-Series. As far back as 1998, I worked with my good friend Robert "Razerguy" Krakoff to launch the Razer into the European gaming community. I've put together a worldwide PC gaming development team at Corsair that's every bit as strong as any I have worked with in the last 13 years. We're going to introduce the Corsair level of excellence to a whole new community of enthusiasts. I hope you only have to look at the detail design that went into these products to realize how much fun we had making them! ■

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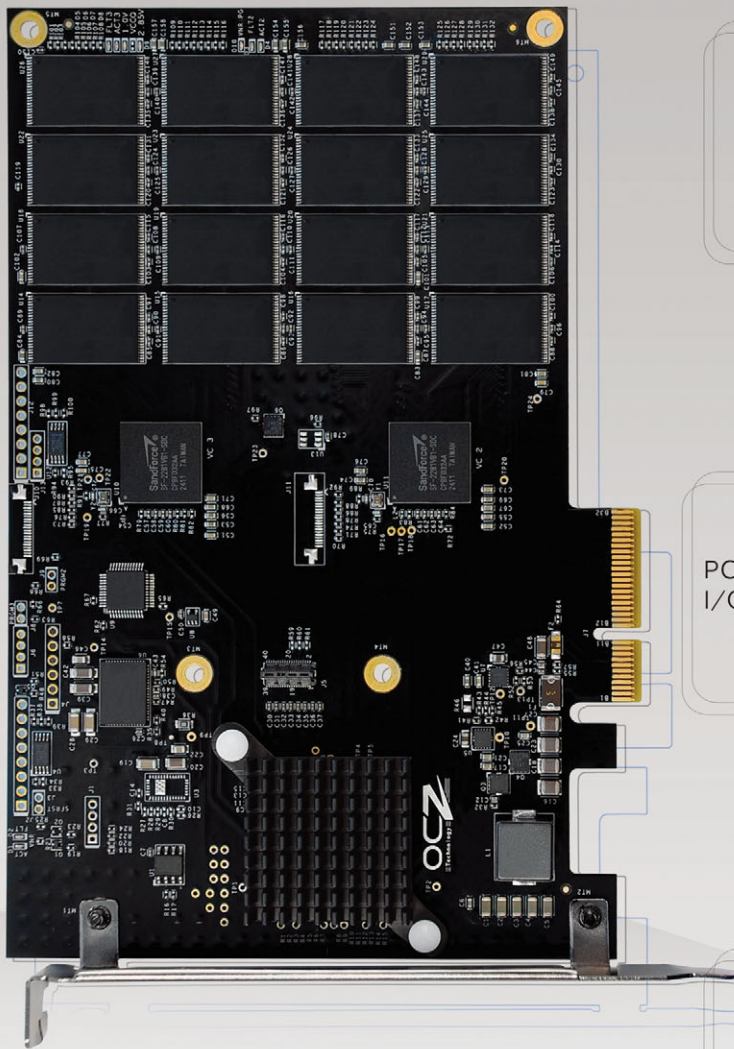
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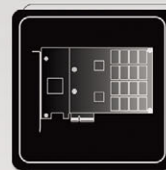
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